A SUMMARY OF THE MĀNASĀRA

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A TREATISE ON ARCHITECTURE AND COGNATE SUBJECTS.

ACADEMICAL THESIS FOR THE DEGREE OF DOCTOR OF THE PHILOLOGY OF THE EAST-INDIAN ARCHIPELAGO (PH. D.) AT THE STATE UNIVERSITY OF LEIDEN (HOLLAND) ON THE AUTHORITY OF THE RECTOR-MAGNIFICUS, DR. G. KALFF, PROFESSOR IN THE FACULTY OF LETTERS AND PHILOSOPHY, DEFENDED BEFORE THE FACULTY OF LETTERS AND PHILOSOPHY ON THURSDAY, THE 27th OF JUNE 1918 AT 2 O'CLOCK IN THE AFTERNOON BY

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PREFACE.

This little book is a small portion of an Introduction approximately 300 pages in print, to the first Edition and the English Translation (both prepared by me) of an ancient text, Mānasāra, on architecture, sculpture and cognate subjects. In 1834 in his Essay on the architecture of the Hindus, Mr. Rām Rāz referred to the contents of the first few chapters of the Mānasāra from a fragmentary manuscript he had access to. Since the publication of this Essay, scholars interested in the subject have been curious to know more about this "monumental work" as Dr. F. W. THOMAS, M. A., PH. D., calls it. But for some reason or other, nobody had made any attempt to deal with this huge text in any way for a period of 80 years, when I undertook the task in 1914. The text comprises more than 10,000 lines and has undergone five recensions. In five different scripts there are eleven badly preserved manuscripts. The important various readings collected from these manuscripts have amounted to about 500 pages, the text itself together with appendices being about 600 pages of 20 lines to a page. It is written in a language which Sanskritists like Dr. G. BÜHLER call the "most barbarous Sanskrit". [1]) It can hardly be called Sanskrit, which etymologically means the refined language of the Aryans, of their Vedas, Epics, Dramas, and other sweet literature. The text is replete with obsolete expressions and technical terms, of which there is no elucidation in any of the existing dictionaries. With a view to enabling scholars to cope with this sort of expressions which are by no means restricted to the *vāstuśāstras*, but are frequently met with in the inscriptions

[1]) *Ep. Ind.* Vol. I. p. 377; cf. also Sir R. G. BHANDARKAR, *Ind. Ant.* Vol. XII, pp. 140, 141.

and the general literature, the authorities of the University of London suggested "to make a full dictionary of all the architectural terms used in the Mānasāra with explanations in English and illustrative quotations from cognate literature" [1]). I was entrusted with this tremendous task, and I have prepared to my satisfaction a dictionary of approximately 1000 pages containing not only all the architectural terms used in the Mānasāra but also those found in the known *vāstuśāstras* and all the published inscriptions and other cognate archaeological records. I have, therefore, not explained the technical terms frequently mentioned in this dissertation. Concerning the date of the Mānasāra, it is premature to assert anything definitely. If I have to express my impression at this stage, I might say that the Mānasāra could not have reached its present shape later than 500 A. D.

Thus this dissertation has no merits to be judged by its own size, which is due to want of leisure on the part of my promotor, or even by its contents which are not showy in the present shape. No one but those who have taken part in similar labours can at all realize the tedious toil which I had to undergo, or will care to look back at the thorny ways which I had to discover and clear for myself through the continuous struggles of four years, before I could achieve the information recorded in the following pages. The object of this summary of the Mānasāra is, however, nothing more than to introduce the various topics in brief and facilitate the understanding of my Translation of the Text. It might at the same time throw a little light, for the first time, upon one of the most useful and hitherto unknown branches of Sanskrit studies.

Another object of this preface is to acknowledge aids and encouragement I have received in connection with my work in Leiden and London.

I take this opportunity to express my gratitude to the Government of H. M., the Queen of the Netherlands for making the necessary amendments to the University-regulations enabling me to take the doctor's degree at the University of Leiden. To the Faculty of Letters and Philosophy I am grateful for their recognition

[1]) Academic Registrar's letter, n°. 1295.2, dated June 6, 1917.

of my qualifications and their recommendation based thereon. In this connection I am sincerely thankful to Prof. Dr. J. Ph. Vogel, Prof. Dr. J. Huizinga, Prof. Dr. C. van Vollenhoven, Prof. Dr. G. Kalff, and other professors of the University who took so lively an interest in the matter of my taking the doctor's degree here. To Prof. Dr. Vogel, as my promotor, I am also grateful for the troubles he has undergone in going through this dissertation. I am further indebted to him as well as to Prof. Dr. C. C. Uhlenbeck, Prof. Dr. J. Huizinga, Prof. Dr. C. Snouck Hurgronje, Prof. Dr. G. Kalff and Prof. Dr. G. J. Thierry for helping me with advice on many an occasion.

For many friendly services I shall ever remain grateful to Mr. E. L. G. den Dooren de Jong, iur. cand., and Miss Ch. L. Du Ry van Beest Holle, Assistant to the Zoötomical Laboratory, who have been very kindly looking after my comfort, convenience, and prosperity in Holland with great zeal and fraternal affection.

In connection with my whole undertaking, my sincere obligations are due to the Secretary of State for India in Council for granting me all facilities and help needed for a pioneer in this most difficult and useful branch of Sanskrit researches. Both to Dr. T. W. Arnold, M. A., Litt. D., C. I. E., and to Mr. N. C. Sen, the well wishing friends and educational advisers to Indian students, I shall ever remain sincerely grateful, not only for their kind recommendation through which I have been getting all pecuniary aids from the India Office in London, but also for their helpful advice and genial sympathy, and still more for their affectionate care and anxiety to make me successful and „happy". I owe to Dr. F. W. Thomas, M. A., Ph. D., the Librarian of the India Office, more obligations than I could ever express. I am indebted to him for all the materials of my work, the much needed consultation, the constant encouragement, the scholarly sympathy, the parental affection, and my success and reward. As a student of the University of London I had the privilege of consulting Dr. L. D. Barnett, M. A., Litt. D. He rendered me a good deal of substantial aid and much needed encouragement for which I am very grateful to him.

To Mr. R. E. Field, the popular warden of 21, Cromwell Road, London, and his estimable wife Mrs. Florence Field I shall ever

remain indebted for very many friendly services in connection with my present work. To the latter I owe the precious motto "never to give up". Miss. E. J. Beck, the Honorary Secretary of the National Indian Association in London, who has been very kindly looking after me with great affection, was the first to read this dissertation in its original form and suggested many improvements. Like many other Indian students, I owe to this talented lady more obligations than I could ever express. And to Miss Dora J. M. Dove, another well wishing friend of Indian students, I am sincerely grateful for her kind help and genial sympathy.

Leiden, June 1918. P. K. Acharya.

CHAPTER I.

The table of contents *(Saṁgraha)*.

The first verse is an invocation of Brahmā, the Creator of the universe. In the second verse it is said that the science of architecture (Vāstuśāstra) had come down from Śiva, Brahmā and Vishṇu, through Indra, Bṛihaspati, Nārada, and all other sages, to the ṛishi Mānasāra who systematised it.

After this, the titles of the chapters are given in order. There are only sixty names, although the work actually contains seventy chapters. This discrepancy is apparently due to the loss of some verses (*śloka*) in this chapter. But all search made for them in all the eleven manuscripts has failed. The colophon of the last chapter (named *Nayanonmīlana*) in all the complete manuscripts gives the number as seventy-one. The manuscript called I, the codex architypus of my text, has made up the number seventy-one, by repeating the chapter, *Strīmāna-madhyama-daśatāla*; once it is numbered 66 and in the second place 67. The only explanation of this number 71 in the last chapter is to suppose that the compilers of all complete and independent groups of manuscripts were equally careless in numbering the chapters. This supposition is corroborated by the fact that the contents of the work do not show that any chapter is missing.

The last verse of the first chapter states the reason why the book is named Mānasāra and explains the importance and authority of the work. It is called Mānasāra after a sage of that name. And as an authoritative work on arts and complete in all its aspects, it has been accepted by the best among the leading artists.

CHAPTER II.

The system of measurement *(Mānopakaraṇa-vidhāna).*

The first part of this chapter gives a mythical genealogy of the artists. From the four faces of Brahmā, the creator of the universe, originated in order the heavenly architect Viśvakarman, Maya, Tvashṭar and Manu. Their four sons are called respectively Sthapati, Sūtragrāhin, Vardhaki and Takshaka. These four evidently represent the progenitors of the four classes of terrestrial artists.

The *sthapati* is highest in rank; he is the master-builder. The *sūtragrāhin* is the *guru* of the other two; while the *vardhaki* is the instructor of the *takshaka.*

The *sthapati* must be well versed in all sciences (*śāstras*). He must know the Vedas. He must have the qualifications of a supreme director (*āchārya*). *Sthāpanādhipatir yasmāt tasmāt sthapatir uchyate.*

The *sūtragrāhin* also should know the Vedas and the Śāstras. He must be an expert draftsman (*rekhājña*).

The *vardhaki*, too, should have a general knowledge of the Vedas. But the object of his special study is painting (*chitrakarman*).

The *takshaka* must be an expert in his own work, i. e. carpentry.

The second part of this chapter deals with the system of measurement.

The *paramāṇu* or atom is the lowest measurement.

8 *paramāṇus* = 1 *rathadhūli* (*lit.* car dust).
8 *rathadhūlis* = 1 *vālāgra* (*lit.* hair's end).
8 *vālāgras* = 1 *likshā* (*lit.* nit).
8 *likshās* = 1 *yūkā* (*lit.* louse).
8 *yūkās* = 1 *yava* (*lit.* barley corn).
8 *yavas* = 1 *aṅgula* (*lit.* finger's breadth).

Three kinds of *aṅgulas* are distinguished, the largest of which is made of 8 *yavas*, the intermediate one of 7 *yavas*, and the smallest one of 6 *yavas.*

12 *aṅgulas*	= 1 *vitasti* (span).	
2 *vitastis* or 24 *aṅgulas*	= 1 *kishku-hasta* (small cubit).	
25 *aṅgulas*	= 1 *prājāpatya-hasta.*	
26 „	= 1 *dhanurmushṭi-hasta.*	
27 „	= 1 *dhanurgraha-hasta.*	
4 *hastas*	= 1 *dhanus* (bow) or *daṇḍa* (rod).	
8 *daṇḍas*	= 1 *rajju* (rope).	

Directions are given with regard to the use of the four different kinds of cubits (*hasta*) enumerated above. Conveyances (*yāna*) and couches (*śayana*) are said to be measured in the cubit of 24 *aṅgulas*, temples (*vimāna*) in the cubit of 25 *aṅgulas*, buildings (*vāstu*) in general, in the cubit of 26 *aṅgulas*, and villages, etc., in the cubit of 27 *aṅgulas*. The cubit of 24 *aṅgulas* may, however, also be used in measuring all these objects.

In the final portion of this chapter directions are given for the preparation of the yard-stick (*hasta*), the rod (*daṇḍa*), and the measuring rope (*rajju*). The former two objects should be made of the wood of certain trees, the names of which are enumerated. In the same manner certain fibres are to be used as materials for the rope. The presiding deity of the yard-stick and the rod is Vishṇu, that of the measuring rope Vāsuki, the king of serpents.

CHAPTERS III, IV, V.

The classification of vāstu *(Vāstu-prakaraṇa)*.

Examination of soil *(Bhū-parīkṣā)* and Selection of site *(Bhūmi-saṁgraha)*.

The first part of the 3rd chapter defines *vāstu* (dwelling, habitation) and divides it into four classes. The place where men and gods reside is called *vāstu*. This includes ground (*dharā*), building (*harmya*), conveyance (*yāna*), and couch (*paryaṅka*). Of these, the ground is the principal one, for nothing can be built without ground as a support. The building (*harmya*) includes

prāsāda, *maṇḍapa*, *sabhā*, *śālā*, *prapā* and *āraṅga*. The conveyance (*yāna*) includes *ādika(?) syandana*, *śibika* and *ratha*. The couches (*paryaṅka*) include *pañjara*, *mañchali*, *mañcha*, *kākāshṭa (?) phalakāsana* and *bālaparyaṅka*.

The second part of the 3rd chapter as well as the 4th and 5th chapters deal with the same subject, namely, the site where a village, town, fort, palace, temple or house is to be built. The soil is examined with regard to its shape, colour, odour, features (*rūpa*), taste and touch. The elevation of the ground as well as the luxuriant growth of certain plants, trees and grasses on the ground are also minutely examined.

If a plot of land is found to be satisfactory on all or most of these examinations, it should be selected for a village, town, fort, or house, as the case may be. But even after this selection it would be wise to test the ground by some other ways. A square hole of one cubit deep should be dug on the selected site and be filled with water. After twenty-four hours the chief architect should mark the condition of the water in the hole. If all the water be dried up by this time, the earth must be very bad. But if, on the other hand, there remains some water in the hole, the selected plot of land would be fit for any building purposes.

Another final test is this: a similar hole is dug on the plot and filled up with the earth taken out of it. If this earth fills up the hole exactly, the land is fair; if this earth be not quite enough to fill up the hole, the ground must be very bad, but if this earth overfills the hole, the soil must be very good for any building purposes. The general import of these examinations seems to be this: in the former case, very dry land is avoided, while in the latter case, very loose or sandy land is said to be unfit for the construction of a building.

After this final selection the ground should be ploughed over. The concluding part of the 5th chapter deals with the minute description of the oxen and the plough to be used in ploughing the selected site.

CHAPTER VI.

The gnomon *(Śaṅkusthāpana-vidhāna).*

The object of this chapter is to lay down rules on the principles of dialing and for ascertaining the cardinal points by means of a gnomon.

The gnomon is made of the wood of certain trees. It may be 24, 18, or 12 *aṅgulas* in length and the width at the base should be respectively 6, 5, and 4 *aṅgulas*. It tapers from the bottom towards the top.

For the purpose of ascertaining the cardinal points, a gnomon of 12, 18, or 24 *aṅgulas* is raised from the centre of a water reservoir (*salilasthala*) and a circle is described with the bottom of the gnomon as its centre and with a radius twice its length. Two points are marked where the shadow (of the gnomon) after and before noon meets the circumference of the circle. The line joining these two points is the east-west line. From each of these east and west points a circle is drawn with their distance as radius. The two intersecting points, which are called the head and tail of the fish (*timi*), are the north and the south points. The intermediate regions are determined in the same way through the fish formed between the points of the determined quarters.

The text is not well preserved; but this seems to be the purport of the first part of the chapter. As regards the principles of dialing, each of the twelve months is divided into three parts of ten days each and the increase and decrease of shadow (*avachchhāyā*) [1]) are calculated in these several parts of the different months.

Why the subject of the present chapter is important for architecture is evident from the rules regarding the orientation of buildings. Here it is said that a building should preferably face the east or the north-east, but that it should never be made to face the south-east, as this is considered inauspicious.

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[1]) Cf. Vitruvius Book IX. Chap. VIII, "... the principles of dialing and the increase and decrease of the *days* in the different months." (translated by Mr. Gwilt).

The chapter closes with a passing reference to the *khāta-śaṅku* which appears to be wooden pegs posted in different parts of the foundations made for constructing buildings thereon.

CHAPTER VII.

The division of the ground into squares *(Padavinyāsa)*.

When a site is selected for purposes of constructing a village, town, or house, the ground is divided into squares of various numbers. Thirty-two kinds of such schemes are distinguished by as many different names according to the number of squares into which the whole area is partitioned out.

The whole scheme has been arranged in such a manner that in each case the number of partitions represents the square of the serial number. The eighth plot, for instance, which is called Chaṇḍita, comprises a division into sixty-four squares, while by the ninth plot which bears the technical name of Paramaśādhika, the ground is divided into eighty-one squares [1]).

Each of these eighty-one squares is again assigned to its presiding deity [2]). Some deities, however, are lords of more than one square. The lord of the central square is always Brahmā. Charagī, Vidārikā, Pūtanā and Rākshasī are the presiding deities of the four corners on the outside, beginning with the north-east [3]). A detailed description of all the squares in each of the thirty-two plans is given in the text.

Then the forty-four deities which have been enumerated in connection with the Paramaśādhika scheme are described in the

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[1]) *Bṛihatsaṁhitā* LIII, 42—68. KERN's *Verspr. Geschr.* vol. II, pp. 17 sqq. Varāhamihira describes only two schemes, namely that of eighty-one squares and that of sixty-four squares.

[2]) Cf. *op. cit.* LIII, 83. KERN, vol. II, p. 22.

[3]) Cf. *op. cit.* LIII, 2—3, 51—54 and 67—78. KERN, vol. II pp. 12—13, 18—19 and 21. In the *Bṛihatsaṁhitā* the position of the *vāstupurusha* (which KERN renders by 'the spirit of the house') is somewhat different, his head being in the north-east corner of the plot.

form of as many *dhyānas*. This portion is of some iconographical interest.

Finally the spirit of the site (*vāstupurusha*), who is described as hump-backed and crooked-shaped, is said to occupy the habitated area (*vāstu*) in such a manner that his limbs cover the several squares or groups of squares which, as set forth in the former part of the chapter, are assigned to and named after various deities. As he is supposed to lie down with his face turned downward, his head being in the central square on the east side (that of Sūrya) his right and left hand must be in the partitions of Agni (S. E.) and Īśa (N. E.) respectively; his right and left foot in those of Nirṛiti (S. W.) and Vāyu (N. W.) respectively. The middle part of his body occupies the central portion of the plot which, as we saw, is assigned to Brahmā.

CHAPTER VIII.

The offerings (*Balikarma-vidhāna*).

Different kinds of offerings (*bali*) are prescribed for the various deities, enumerated in the immediately preceding chapter, which are supposed to preside over the different partitions of the Paramaśadhika (or Maṇḍūka) ground-plan. These offerings consist of milk in its various forms, butter, rice and sesame; parched grain (*lāja*); honey and sweetmeat (*modaka*, offered to Sugrīva); incense and lamps; flowers and fruit. Blood is offered to Asura, dried meat to Mṛiga, dried fish to Roga (Disease), and sea-fish to Bhṛiṅgarāja. The four demonesses Rākshasī, Pūtanā, Vidārī and Charagī also receive their share, the first-mentioned evil spirit in the shape of meat of goats mixed with blood.

In the bringing of these offerings the master-builder (*sthapati*) takes a leading part.

CHAPTER IX.

The village (*Grāmalakshaṇa-vidhāna*).

According to the Mānasāra, there is not much difference between a village, a town, and a fort. All are fortified places intended for the residence of people. A town is the extension of a village. A "fort" (*pura*) is in many cases nothing more than a fortified town, only with this difference that a fort is principally meant for purposes of defence, while a village or a town is mainly intended for habitation.

The description in detail of the plan of villages, towns, and forts and the arrangement of the various buildings which they contain is given in the text.

A few observations on the plan in general as well as on some important points as to the internal arrangement will be made here.

According to the shape the villages are divided into these eight classes, called *daṇḍaka*, *sarvatobhadra*, *nandyāvarta*, *padmaka*, *svastika*, *prastara*, *kārmuka* and *chaturmukha*.

Each village is surrounded by a wall made of brick or stone. Beyond this wall there is a ditch broad and deep enough to cause serious obstruction in the event of an attack on the village. There are generally four main gates at the middle of the four sides and as many at the four corners. Inside the wall there is a large street running all round the village. Besides, there are two other large streets, each of which connects two opposite main gates. They intersect each other at the centre of the village, where a temple or a hall is generally built for the meeting of the villagers. The village is thus divided into four main blocks, each of which is again subdivided into many blocks by streets, which are always straight, and which run from one end to the other of a main block. The two main streets crossing at the centre have houses only on one side facing the street. The ground floor of these houses on the main streets consists of shops. The surrounding street has also houses only on one side. These houses are mainly public buildings, such as schools, colleges, libraries, guest-houses, etc. All other streets generally have residential

buildings on both sides. The houses high or low are always uniform in make. The drains (*jaladvāra*; lit. water passage) are made towards the sloping of the village. Tanks and ponds are dug in all the inhabited parts and located in such quarters as can conveniently be reached by a large number of inhabitants. The temples of public worship as well as the public commons, gardens and parks are similarly located. The people of the same caste or profession are generally housed in the same quarter.

This partition of the quarters among the various sects cannot be said to be quite impartial. The best quarters are generally reserved for the Brahmins and the artist-class. Such partiality to the artists is not met elsewhere in Sanskrit literature. The quarters of the Buddhists and the Jainas are described in a few lines. The habitations of the Chaṇḍālas as well as the places for cremation are located outside the village wall, (in the north-west in particular). The temples of fearful deities such as Chāmuṇḍā are also placed outside the wall.

CHAPTER X.

Towns [and Forts] *(Nagara-vidhāna)*.

As it was observed, a town is a large village. According to the Mānasāra, it appears that the dimensions of the smallest town-unit are 100 × 200 *daṇḍas*; the largest town-unit is 7,200 × 14,400 *daṇḍas*. A town may be situated from east to west or from north to south according to the position it occupies. There should be one to twelve large streets in a town. It should be built near a river or a mountain and should have facilities for trade and commerce with the foreigner *(dvīpāntaravartin)*. Like a village, it should have walls, ditches and gates, drains, parks, commons, shops, exchanges, temples, guest-houses, colleges, etc. For purposes of military defence, the towns are generally well fortified.

Towns are divided into eight classes; *rājadhānī*, *nagara*, *pura*, *nagarī*, *kheṭa*, *kharvaṭa*, *kubjaka* and *pattana*. The distinction of these towns is very slight. The general description of towns given above is applicable to all of these.

The details will be found in the text. It may, however, be pointed out here that a city of the last mentioned class called *pattana* is a big commercial port. It is situated on the banks of the sea or a river, and is always in exchange and commerce with foreigners who deal specially in jewels, silk clothes and perfumes etc., imported from other countries *(dvīpāntara)*.

Forts are first divided into eight classes called *śibira*, *vāhīnāmukha*, *sthānīya*, *droṇaka*, *saṁniddha* or *vardhaka*, *kolaka*, *nigama* and *skandhavāra*. There is a further division of these forts according to their position. They are known as mountain fort (*giridurga*), forest fort (*vanadurga*), waterfort *(jaladurga)*, chariot fort (*rathadurga*), gods' fort (*devadurga*), marsh fort (*paṅkadurga*) and mixed fort (*miśradurga*) [1]).

The mountain fort is sub-divided into three classes, as it may be built on the top of the mountain, in the valley, or on the mountain slope.

All these forts are surrounded with strong walls and ditches. The wall is made of brick, stone, and similar materials. It is at least 12 cubits in height and its thickness at the base is at least 6 cubits. The wall is provided with *saṁchāras* (galleries?).

CHAPTER XI.

The dimensions of buildings of various stories (*Bhūmilamba-vidhāna*).

The name of this chapter is "Bhūmilamba" which literally means the height of the story. The Kāmikāgama (*paṭala* 50, verse 1) defines this name, Bhūmilamba, thus: "*Chaturaṁśādi saṁsthānaṁ bhūmilambamiti smṛitaṁ*". This definition does not correspond to the contents which are actually found in the chapter in both the works Mānasāra and Kāmikāgama. The contents imply simply the measurement of length, breadth, and height of buildings of one to twelve stories.

The various shapes of buildings are given in the opening lines

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[1]) Cf. *Manu* VII, 69 and *MBh.* XII, 86, 4.

of the chapter. They may be square, rectangular, round, octagonal or oval. Buildings of all kinds, such as the *vimāna* or temple, the *harmya* or palace, the *gopura*, *śālā*, *maṇḍapa*, or *veśman* (residential house generally), should have either of these five shapes.

Buildings are again divided into four classes — *jāti*, *chhanda*, *vikalpa* or *saṁkalpa*, and *ābhāsa* — which are frequently referred to in the subsequent chapters. But the criterion of this classification is not quite clear. These four classes seem to have different characteristics in different cases.

The proportion between height and width is expressed by five technical names — *śāntika*, *paushṭika*, *pārshṇika* (sometimes called *jayada*), *adbhuta*, and *sarvakāmika*. When the height of a building or idol is $2^1/_4$ of its width, it is called *śāntika*; the *paushṭika* height is twice the width; the *pārshṇika* or *jayada* height is $1^3/_4$ of the width; the *adbhuta* height is $1^1/_2$ of the width, and the *sarvakāmika* height is $1^1/_4$ of the width. This proportion of height and width is not, however, strictly followed all through. There is a slight variation in some cases. But the proportions given above are the most common. The measurement of length, breadth and height is invariably divided into three types: largest, intermediate, and smallest. The *śāntika* and the *paushṭika* heights are prescribed for the largest type of measurement, the *pārshṇika* or *jayada* for the intermediate type, and the *adbhuta* and the *sarvakāmika* for the smallest type.

Five series of length and five series of breadth are prescribed here for each of the classes of buildings of one to twelve stories. But in some subsequent chapters, as many as nine alternatives of length or breadth are prescribed for one and the same building. A modification of these alternative measurements is discussed under the *āyādishaḍvarga* which will be dealt with later.

The five series of breadth in the smallest type of one-storied buildings are 2, 4, 6, 8, and 10 cubits, and the five series of length are 3, 5, 7, 9, and 11 cubits.

In the intermediate type, the five series of breadth are 5, 7, 9, 11 and 13 cubits, and the five series of length 6, 8, 10, 12 and 14 cubits. In the largest type, the five series of breadth are 6, 8, 10, 12, and 14 cubits and the five lengths are 7, 9, 11, 13, and 15 cubits.

All the classes of buildings of one to twelve stories are in this way measured separately. The dimensions of the twelve-storied building in its three types are given briefly [1]).

In the smallest type, 35, 37, 39, 41, 43 (? 44), in the intermediate type, 36, 38, 40, 42, 44, (? 45), and in the largest type, 37, 39, 41, 43, 45 cubits. These are the fifteen kinds of *Vipula* (? width) and the height should be as before

These are the measurements in the *jāti* class of buildings. Three-fourths, half and one-fourth of these are prescribed for the *chhanda*, the *vikalpa*, and the *ābhāsa* classes respectively.

The concluding part of this chapter prescribes the number of stories allowed in edifices according to the social status of their occupants. In the first instance reference is made to the various classes of kings [2]), amongst whom the one highest in rank, namely the *chakravartin* or universal monarch, is said to inhabit a palace of five to twelve stories. The residence of the heir-apparent (*yuvarāja*) as well as those belonging to the chief feudatories (*sāmanta-pramukhya*) should have one to three stories.

CHAPTER XII.

The foundation *(Garbhanyāsa-vidhāna)*.

The foundation is classed under three heads — for buildings, for villages, etc., and for tanks, etc.

The last named foundation which is meant for a cistern, well, or tank (*vāpī-kūpa-taṭāka*), is said to be as high as the joint palms of a man (*narañjali*).

The depth of the foundation-cave (*garbhabhājana*) in case of

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[1]) The description of these dimensions is much clearer in the *Kāmikāgama* (*paṭala* 50). According to this work, the width of a twelve-storied building is 70 cubits and the height 100 cubits. It expressly states (*śloka* 33) that it is never desirable that buildings should be larger than 77 cubits in height and 70 cubits in width.

[2]) Cf. below, chapter XLI. In the present passage only six out of the nine classes are mentioned, the *maṇḍaleśa*, *paṭṭadhara* and *pārshṇika* having been omitted.

a village, a town or a fort (*grāma, nagara, pura, pattana, kharvaṭa, koshṭha, kola*, etc.) is of five kinds, 5, 7, 9, 11, 13 *aṅgulas*, and in the case of a building it is equal to a man's palm.

The foundation of buildings is further divided into two classes — as it may belong to temples and to human dwellings. Of temples those of Vishṇu and Brahmā are dealt with, and the others are said to be like these.

Of the human dwellings, there are four classes according to the four castes — Brahmin, Kshatriya, Vaiśya and Śūdra.

In the laying of a foundation ritualistic prescriptions take a prominent part, the actual process apparently being the same in all cases. The details of the process are not quite clear, but the main purport seems to be as follows:

The depth of the foundation-cave is equal to the height of the basement. The four corners (? sides) built of brick or stone are equal. This cave is filled with water and ten kinds of earth, such as, earth taken from an anthill, from a crab-cave, etc., are placed at the bottom.

Portions of certain plants are then deposited on the four sides: the root of the blue lotus (*utpala-kanda*) to the east, the root of the white lotus (*kaumuda-kanda*) to the south, *saugandhi* (a kind of fragrant grass) to the west, and some other plant, the name of which is lost, to the west. Above these are to be placed grains of ten kinds of cereals, to wit: *śāli* (rice) to the north-east, *vrīhi* (rice) to the east, *kodrava* (paspalum scrobiculatum) to the south-east, *kaṅgu* (panicum italicum) to the south, *mudga* (phaseolus mungo) to the south-west, *māsha* (phaseolus radiatus) to the west, *kulattha* (dolichos uniflorus) to the north-west and *tila* (sesamum indicum) to the north.

The twelve kinds of its breadth and length to suit buildings of one to twelve stories are respectively 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25; and 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26 *aṅgulas*. And its height should be equal to the breadth or less by $^1/_8$ or $^1/_5$ of the breadth.

In the remaining portion of the chapter which is very obscure an architectural member, called *mañjūsha*, figures most prominently.

The concluding lines of this chapter deal with the measurement of brick, with which buildings of one to twelve stories are pre-

ferably built, and also with the ceremonies in connection with laying the foundation-stone, (lit. first brick, *prathameshṭaka*).

The breadth of a brick may be from 7 to 29 or 30 *aṅgulas*. The length is greater than the breadth by $^1/_4$, $^1/_2$, or $^3/_4$; or is twice the breadth. And the thickness should be half the breadth.

CHAPTER XIII.

The Pedestal *(Upapīṭha-vidhāna)*. [1])

The opening lines of the chapter describe the height of the pedestal as compared with the base. This height is said to be of nine kinds which are worked out by nine proportions. Five of them are those expressed by the technical terms *śāntika*, *paushṭika*, *jayada*, *adbhuta* and *sarvakāmika* (1/3; 1/4; 1/5; 1/6; and 1/7). The details of the remaining four proportions are not clear, owing to the corruptness of the text. Rám Ráz supposes that the height of the pedestal is to be reckoned from one-quarter to six times the height of the base.

The next topic of this chapter refers to the [illegible] of the projections (*nirgama*) of pedestals. The height of the pedestal is divided into 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 equal parts; of these 1, 2, 3, 4, 5, 6, 7, or 8 are given to the projection. The nine kinds of projection are 1, $1^1/_4$, $1^1/_2$, $1^3/_4$, 2, $2^1/_4$, $2^1/_2$, $2^3/_4$, and 3 *hastas*. The projections may be 1, $1^1/_2$, 2, $2^1/_2$, 3, $3^1/_2$, 4, 5, 6, 7, 8, or 9 *daṇḍas*.

After this, the pedestals are divided into three classes known as *vedibhadra*, *pratibhadra* and *mañchabhadra*. Each of these are sub-divided into four types. The measurements of the mouldings of each of these twelve kinds of pedestals is given in detail.

The remaining portion of the chapter contains a lengthy enumeration of the names and measurements of the various mouldings which are to be employed in each of the twelve kinds of pedestal.

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[1]) Rám Ráz, *Essay on the architecture of the Hindús*. London 1834, pp. 25—27; plate I.

CHAPTER XIV.

The Base (*Adhishṭhāna-vidhāna*). [1])

The heights of bases are of twelve kinds beginning with 30 *aṅgulas* and ending with 4 *hastas*, the increment being by 6 *aṅgulas*. These twelve heights are respectively used in twelve different stories one above the other. The heights of bases are said to be 4 *hastas* in the houses of the Brahmins, 3 *hastas* in those of the Kshatriyas, 2 *hastas* in those of the Vaiśyas and 1 *hasta* in the houses of the Śūdras.

Bases are divided into sixteen different types, most of which are again subdivided. Their names are *pādabandha*, *uragabandha*, *pratikrama*, *kumudabandha*, *śrībandha*, *padmakesarabandha*, *padmabandha*, *kumbhabandha* (or *kalaśabandha*), *ratnabandha*, *vajrabandha*, *ratnabandha*, *paṭṭabandha*, *kampabandha*, *kukshibandha* and *śrīkānta*. Of each of these various types the mouldings and ornaments are described in detail.

CHAPTER XV.

The pillar (*Stambha-lakshaṇa-vidhāna*) [2]).

The opening lines divide the subject matter into five heads, — 1st the measurement of pillars, 2nd their shape, 3rd their ornaments and mouldings, 4th the collection of wood for purposes of making pillars which are also made of stone, and, 5th, the ceremonies and process of erecting pillars.

The height of a pillar is measured from above the base to below the *uttara*, or above the pedestal from the *janman* to the *uttara*. The height of a pillar, in other words, is measured from the plinth up to the lowest member of the entablature, so as to include the capital. In an important passage in the Kāśyapa, quoted by Rám Ráz, it is stated that the measurement may

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[1]) Rám Ráz, *Essay* p. 28; plates II and III.
[2]) *Ibidem* pp. 28—40; plates IV—XVIII.

also be taken from the cimbia of the shaft, exclusive of the base.

The height of a pillar is twice, $1^1/_2$ or $1^1/_4$ times that of its base (?) or the height of the pillar begins at $2^1/_2$ *hastas* and ends at 8 *hastas*, the increment being by 6 *aṅgulas* or $^1/_4$ *hasta*. But according to Kāśyapa, the height of the pillar may be 3 times that of the base; or 6 or 8 times that of the pedestal. The width (diameter) of a pillar may be 1/6, 1/7, 1/8, 1/9 or 1/10 of its height; 1/3, 1/4 or 1/6 of the height, if it be a pilaster (*kuḍyastambha*). The width of the pilaster, according to the Mānasāra, is 3, 4, 5 or 6 *mātras* (*aṅgulas*), — and twice, thrice, or four times of these should be the width of the *kampa*. The height of a pillar being divided into 12, 11, 10, 9, or 8 parts, the one of these parts is the breadth of the pillar and at the top it is diminished by one fourth.

The column admits of different shapes. A square pillar is called *brahmakānta*. An octangular one is called *vishṇukānta*. A sixteen-sided or circular one is known as *rudrakānta*. A pentagonal one is called *śivakānta*, and the hexagonal one *skandakānta*. These shapes are stated to be uniform from bottom to top. But the base may be quadrangular.

With respects to dimensions and ornaments, the five kinds of columns, — *brahmakanta*, *vishṇukānta*, *rudrakānta*, *śivakānta*, and *skandakānta*, — are called *chitrakarṇa*, *padmakānta*, *chitrakambha*, *pālikāstambha*, and *kumbhastambha*. The sixth one, *koshṭhastambha*, in the latter division, is stated to be two-sided, and is the same as the *kuḍyastambha* or pilaster.

It should be noticed that the former set of five names refers to the shapes of the shafts, whilst the latter set of five names is based on the shapes of the capitals, but in the detailed description (which is given below) both the capital and shaft are included.

Columns, when in rows, must be in a straight line. The general rule is this: "The intercolumnation may be two, three four, or five diameters; it is measured in three ways, 1st from the inner extremity of the base of one pillar to that of another, 2nd, from the centre of the two pillars; and 3rd from the outer extremities of the pillars including the two bases". "There are no fixed intercolumnations in Hindū architecture.

This has been left to the discretion of artists who are how-

ever required to be particularly careful with regard to beauty and utility. Minor pillars are to be proportionate to the main pillar. A main pillar with one minor pillar (*upapāda*) is called *ekakānta*, with two minor pillars *dvikānta*, and with three minor pillars *trikānta*. A main pillar with four minor pillars is *brahmakānta;* with five *śivakānta;* with six *skandakānta*, and with eight minor pillars, it is called *vishṇukānta*. The composition of these pillars cannot be expected to be quite clear from the meagre description without ocular observation.

The tedious description of the collection of wood for purposes of pillars might as well be omitted. The details seem to point out that in the time when the Mānasāra was composed wood was frequently used for making columns; stone pillars are also mentioned, but pillars made of brick alone are not particularly dealt with. It is, however, stated that stone, brick, and wood were used for making different parts of a column. The square *ādhāra* or base of a stone pillar should be made of stone, and that of the wooden pillar of wood. But at the end of the next chapter, it is stated that all the parts of a column should be made of stone (*śilā*), wood (*dāru*), or brick (*ishṭaka*). In the middle of the same chapter, the use of these three materials is elaborately discussed. The pillars etc. are called *śuddha* (pure) when made of one material, *miśra* (mixed) when made of two materials, and *saṁkīrṇa* (amalgamated) when made of all the three (or more) materials.

The concluding part of this chapter deals with ceremonies in connection with erecting columns. They are essentially ritualistic. It is directed that the column should be posted (*veśayet*) at the side of a *maṇḍapa*.

CHAPTER XVI.

The entablature (*Prastara-vidhāna*).

The height of the entablature (*prastara*), as compared with that of the base (*adhishṭhāna*), is of six kinds. The height of the former may be equal to that of the latter, or less by $^1/_4$, or greater by $^1/_4$, $^1/_2$ or $^3/_4$; or twice, or, in cubit (*hasta*) measure-

ment, these six kinds of height of the entablature begin from 7 cubits and end by $4^1/_2$ cubits, the decrement being by $^1/_2$ cubit. These six kinds of entablatures are respectively used in the houses of the gods, the Brahmins, the kings (or Kshatriyas), the crown-princes (*yuvarāja*), the Vaiśyas and the Śūdras.

The height of the entablature is said to be $^1/_4$ or $^3/_4$ of, or equal to, that of the pillar (*pāda*) or greater by $^1/_4$, $^1/_2$ or $^3/_4$. Yet another set of six heights is described. The height of the pillar being divided into eight parts, seven, six, five, four, three or two parts may be assigned to that of the entablature.

The greater portion of the chapter is devoted to an enumeration of the various mouldings and their measurements to be used in the different kinds of entablatures.

In this chapter the roof (*prachchhādana*) of buildings is described. It is stated that a brick-built building may be furnished with a wooden roof, and that the roofs of stone buildings should also be built of stone.

CHAPTER XVII.

The wood-joinery (*Saṁdhikarma-vidhāna*).

The definition of the name (*saṁdhi-karman*) of the chapter is given in the opening lines. The joining of pieces of wood for buildings is so called. Several kinds of wood-joining are described in detail. It would be impossible to give here a résumé. But it may be noted that wood was very frequently used in constructing houses of various kinds; some parts of pillars too were made of wood, as has already been pointed out. Doors were mostly made of wood. The same was the case with couches, cars, chairs, etc.

The wood-joining is of various kinds and forms. Pieces of wood are said to be joined in such a way as to make the *nandyāvarta*, *svastika*, *sarvatobhadra* and such other shapes. Some kinds of wood are strictly forbidden to be joined with some others. Fresh timber should under no circumstances be joined with old one.

CHAPTER XVIII.

The vimāna (*Vimāna-vidhāna*).

The contents of the chapter are divided into the following headings: 1st, the classification of the *vimānas* of one to twelve stories; 2nd, the three styles of architecture; 3rd, the characteristic features of the *stūpikā* or pinnacle, the *stūpikāla* or pinnacle-staff, the *lupa*, and the *mukhabhadra*; and 4th, the ceremonies of posting the *stūpikā*.

The description begins with the making of the foundation; but this subject has already been dealt with in the 12th chapter.

The classification of the *vimānas* of one to twelve stories is elaborately described here, the absolute dimensions of them having already been given in the 11th chapter called *Bhūmilamba-vidhāna*. Each of the twelve classes is subdivided into three types, according to their size — largest, intermediate, and smallest. Whilst the width of the smallest type of a one-storied building is 1, 2, 3, 4, 5, or 6 parts, it should be 5, 6, or 7 parts in the intermediate type; and 6, 7, or 8 parts in the largest type. These "parts" appear to be the partitions of the façade bordered by two pilasters (*pāda*).

The three styles of architecture are called *nāgara, drāviḍa*, and *vesara*, which are apparently geographical names. The distinguishing feature seems to be the general shape of the *śikhara*.

In the third place the measurement and mouldings of the pinnacle (*stūpī* or *stūpikā*) are given in detail. The height of the *stūpī* is one cubit (*hasta*) in the houses of the Śūdras, two cubits in those of the Vaiśyas, two cubits and a half in the houses of the crown-princes (*yuvarāja*), three cubits in the houses of the kings (*kshatriya*), three cubits and a half in the houses of the Brahmins, and four cubits in the houses of the gods (*viz.* in temples).

Building materials are then discussed. Four of such materials are distinctly mentioned: stone, brick, wood, and iron (*lauha*).

Buildings are made of one, two, three, or all the four of these materials, but preference is given to one material alone. With regard to materials, buildings are divided into three classes:

śuddha (pure), *viz.* made of one material alone, *miśra* (mixed), *viz.* made of two materials, and *saṁkīrṇa*, (amalgamated) *viz.* made of three or more materials.

The term *stūpikīla* literally means the nail, or pin of the *stūpī*. Its form is described clearly. It is quadrangular at the base, octagonal at the middle, circular at the top, and tapering gradually from bottom to top. The width at the top is one *aṅgula*.

Then two more architectural members are described, namely the *lupa* and the *mukhabhadra*. The former is described by Rám Ráz [1]) as "a sloping and a projecting member of the entablature, representing a continued pent roof. It is made below the cupola [*śikhara*], and its ends are plāced as it were suspended from the architrave, and reaching the stalk of the lotus below".

The name *mukhabhadra*, as pointed out by the same author [2]), indicates an ornamental niche which occupies a central position in the façade of the building.

The chapter is concluded with a description of the ceremonies in connection with fixing the *stūpikīla*.

CHAPTER XIX.

The one-storied building (*Ekabhūmi-vidhāna*) [3]).

The chapter opens with various classifications of buildings. They are first divided into four classes called *jāti*, *chhanda*, *vikalpa*, and *ābhāsa*. Here they are considered with regard to their measurement. The *jāti* class is said to be measured in the *pūrva-hasta*, — the first kind of cubit, i. e. the cubit of 24 *aṅgulas*. The *chhanda* is measured in $^3/_4$ cubit, the *vikalpa* in $^1/_2$ of this(?), and the *ābhāsa* in $^1/_2$ cubit or span.

A further classification is into *sthānaka*, *āsana* and *śayana*, which are also called respectively, *saṁchita*, *asaṁchita* and *apasaṁchita*. This classification also refers to measurement. In the *sthānaka* class the measurement of the height is considered, in

[1]) Rám Ráz, *Essay*, p. 52, footnote 2.
[2]) *Ibidem*, pp. 51 f.
[3]) Cf. *ibidem* pp. 49—53; plate XXI.

the *āsana* the breadth is taken into consideration, and in the *śayana* the width is measured. It should be noted that these three classes, namely *sthānaka*, *āsana*, and *śayana*, have a further significance with regard to the object of worship. In the *sthānaka* buildings the idol is in the erect posture, in the *āsana* buildings, it is in the sitting posture, and in the *śayana* buildings it is in the recumbent posture.

A third classification refers to the shape. Buildings are classed as male (*purusha*) when they are equiangular or circular, and as female, when they are rectangular. Male deities are installed in male temples, and female deities in female temples. It is added, however, that the images of the latter may be placed in male temples too.

After this introduction follows the description of the one-storied buildings. The absolute measurement is referred to the chapter called *Bhūmilamba* (dimensions of stories). The comparative measurement and plan are described at great length. The whole height of the building is divided into a certain number of equal parts which are distributed in a happy proportion amongst the different members, namely, the base, the pillar, the entablature, the neck, the dome and the pinnacle. Similarly the length of the entire temple is divided into a certain number of equal parts which are also distributed among various rooms and halls, namely, the *garbhagṛiha* or shrine, the *antarāla* or anteroom, and the *maṇḍapa* or porch. These component chambers of the temple building are described in detail in subsequent chapters, as is also the case with gates (*gopura*), courts (*prākāra*) and such architectural members as doors, windows, arches, and so forth. In the present chapter a detailed account is given of the water-spout (*nāla*) which is meant to be an outlet for the water with which the idol has been washed.

The eight kinds of one-storied buildings are known as *jayantika*, *bhoga*, *śrīviśāla*, *svastibandhana*, *śrīkara*, *hastipṛishṭha*, *skandhatāra*, and *keśava*.

The concluding portion of the chapter (as well as of the next eleven chapters) is devoted to an enumeration of the various deities with whose images the doors and walls of the temple should be decorated.

The Buddhist and the Jain temples, dealt with in only two lines, are directed to be similarly built with this difference that in these temples the images of the Buddhist and the Jain gods should be made instead of those of the Brahmins.

CHAPTERS XX—XXX.

Buildings of two to twelve stories. [1])

The contents of these eleven chapters of the Mānasāra may be conveniently summarized at the same time. They deal respectively with two-storied (*dvitala*), three-storied (*tritala*), four-storied (*chatustala*), five-storied (*pañchatala*), six-storied (*shaṭtala*), seven-storied (*saptatala*), eight-storied (*ashṭatala*), nine-storied (*navatala*), ten-storied (*daśatala*), eleven-storied (*ekādaśatala*), and twelve-storied (*dvādaśatala*) buildings. In each of these chapters we find a classification of the peculiar kind of edifice under discussion followed by an account of certain details, in particular, the location of the divine images, with which the walls are decorated. Thus the buildings of two stories are divided into eight classes which are called *śrīkara*, *vijaya*, *siddha*, *paushṭika*, *pārshṇika*, *prabhūtaka*, *svastika* and *pushkala*. Those of three stories are likewise divided into eight classes called *śrīkānta*, *āsana*, *sukhālaya*, *keśara*, *kamalāṅga*, *brahmakānta*, *merukānta* and *kailāsa*.

The same eight-fold division is found in connection with the four-storied buildings; here the names are *vishṇukānta*, *īśvarakānta*, *mañchakānta*, *indrakānta*, *chaturmukha*, *rudrakānta* and *vedikānta*. The eight classes of the five-storied buildings are called *airāvata*, *bhūtakānta*, *viśvakānta*, *mūrtikānta*, *yamakānta*, *gṛihakānta*, *yajñakānta* and *brahmakānta*. In the case of the buildings of six stories there are no less than thirteen classes, the technical names of which are *padmakānta*, *kāntāra*, *sundara*, *upakānta*, *kaṇṭala*, *ratnakānta*, *vipulāṅka*, *jyotishkānta*, *saroruha*, *vipulakṛiti*, *svastika*, *nandyāvarta* and *ikshukānta*. The seven-storied buildings are divided into eight kinds — *puṇḍarīka*, *śrīkānta*,

[1]) Rám Ráz, *Essay*, pp. 53—57; plates XXII—XXXIV.

śrībhoga, *dhāraṇa*, *pañjara*, *āśramāgārā*, *harmyakānta* and *himakānta*. The eight classes of eight-storied building are called *bhūkānta*, *bhūpakānta*, *svargakānta*, *mahākānta*, *janakānta*, *tapaskānta*, *satyakānta* and *devakānta*. Those of nine stories are divided into seven kinds — *saurakānta*, *raurava*, *chaṇḍita*, *bhūshaṇa*, *vivṛita*, *supratīkānta* and *viśvakānta*, of which the first-mentioned four represent the smallest type of nine-storied buildings, the next two the intermediate type, and the last one the largest type. The ten-storied buildings are divided into six classes which are named — *bhūkānta*, *chandrakānta*, *bhavanakānta*, *antarikshakānta*, *meghakānta* and *abjakānta*. Buildings of eleven stories admit of six varieties — *śambhukānta*, *īśakānta*, *chakrakānta*, *yamakānta*, *vajrakānta* and *akrakānta*. Finally buildings of twelve stories are divided into ten kinds — *pañchāla*, *drāviḍa*, *madhakānta*, *kaliṅga*, *varāṭa*, *kerala*, *vaṅsaka*, *magadha*, *janaka*, and *sphūrjaka*. It deserves notice that in this instances the terms by which the classes are designated are for the greater part geographical names.

In chapter XXX we find, moreover, a lengthy account of staircases (*sopāna*).

CHAPTER XXXI.

The courts (*Prākāra-vidhāna*).

The chapter begins with the announcement that five kinds of *prākāra-* [1]) buildings will be discussed in connection with *bali* (offerings), *parivāra* (attendant deities), *śobhā* (beauty) and *rakshaṇa* (defence).

But the main object of the chapter is evidently to describe the various courts into which the whole compound of the temple is divided. The description of five such courts is given. The first

[1]) The word *prākāra* literally means a wall, enclosure, fence, rampart, a surrounding wall elevated on a mound of earth. In the *Śāṅkhāyana-śrauta-sūtra* (XVI. 18, 14) it denotes a walled mound supporting a raised platform (*prāsāda*) for spectators. Almost in the same sense it is found in the *Mahābhārata* and the *Manusaṁhitā*. The Mānasāra, however, uses it in a slightly different sense, namely, in that of a temple court.

or innermost court is called the *antarmaṇḍala*. The second is known as *antaniḥāra* and the third as *madhyamahārā*. The fourth court is technically named *prākāra*. The fifth and last one is known as the *mahāmaryādā* or 'the extreme boundary' where gate houses (*gopuras*) etc. are constructed. As the title of the chapter indicates, the greater part of it describes only the fourth court. Here it may be briefly observed that this *prākāra* is also divided into the *jāti*, *chhanda*, *vikalpa*, *ābhāsa*, and *kāmya* classes. Under each class a number of buildings (*śālā*) is exhaustively described. A further classification (*saṁkīrṇa* etc.) is made with regard to the materials of which the *prākāra*-buildings are made. These materials are the same as in other cases, namely, stone, brick and timber. [1])

The shrines of the attendant deities (*parivāra-vimāna*) and the *gopuras* are very briefly described in conclusion, the next two chapters being entirely devoted to a special treatment of these two kinds of buildings.

CHAPTER XXXII.

The attendant deities (*Parivāra-vidhāna*).

The temples of these deities are directed to be built round the *prākāra*. At the eight cardinal points of the innermost or the first court, the temples of a group of eight deities are built. Groups of sixteen and thirty-two deities are located in the second and the third courts respectively. Between the third and the fifth courts is said to be the *viniyoga-maṇḍapa*. After a lengthy description of the location of temples for each of the deities of these three groups, the attendant deities of Vishṇu are described in detail.

With regard to the family of Vishṇu, it may be pointed out that it also includes the same three groups of eight, sixteen and thirty-two deities. The second group relating to Vishṇu includes Buddha too. The well known ten incarnations of Vishṇu, except

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[1]) Cf. above pp. 19 and 20.

the *Matsya* (fish) and the *Kūrma* (tortoise) are included in the third group.

The temples of the Bauddhas and the Jainas, it is expressly stated, should be constructed according to the rules of their own *śāstras*.

It should be noticed that the description of the temples intended for so many deities does not contain any measurements etc. The text is solely occupied with the location of these temples or deities in the compound. But a considerable portion of the chapter is devoted to the description of *maṇḍapas* for such purposes as bath, bed, assembly, horses, musicians, dancing girls, cows, and so forth.

CHAPTER XXXIII.

The gopura (*Gopura-vidhāna*) [1].

Gateways (*gopura*) are built in front of each of the five courts into which the whole compound of the temple is divided. The *gopura* belonging to the first court (*antarmaṇḍala*) is technically called the *dvāra-śobhā* or "the beauty of the gate" [2]; that belonging to the second court is known as *dvāra-śālā* or gate-house. The gate-house of the third court is called *dvāra-prāsāda*, and that of the fourth court (*prākāra*) has the name of *dvāra-harmya*. The gate-house of the fifth or outermost court (*mahāmaryādā*) is known as *mahāgopura* or the great gate-house.

Each of these five classes of gateways admits again of three kinds — the smallest, the intermediate, and the largest. Gate-houses are exhaustively described under these fifteen kinds. They are further divided into ten classes with regard to the number of architectural members designated as *śikhara* (domes) *stūpikā* (pinnacle), *galakūṭa* (neck-peak), and *kshudranāsī* (vestibule). A *gopura* is thus technically called *śrībhoga* when its *śikhā* is like a *śālā*; it has a circular surrounding *stūpikā* and is furnished

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[1]) Rám Ráz. *Essay*, pp. 58—61; plates XXXVI—XLII.

[2]) This term in Prākrit form (*duārasohā*) occurs *Mṛichchhakaṭikā* (ed. Stenzler) p. 72, l. 13 in the description of Vasantasenā's palace (Act V).

with a *galakūṭa*, four *kshudranāsis* and eight *mahānāsis*. The remaining nine classes are called respectively — *śrīviśāla*, *vishṇukānta*, *indrakānta*, *brahmakānta*, *skandakānta*, *śikhara*, and *saumyakānta*. The names of two of these ten classes are evidently missing.

The fifteen kinds of gate-houses referred to above may have one to sixteen or seventeen stories. But the details of those of one to five stories only are given, others being left to the discretion of the artists and stated to be built in the same way as those described so minutely.

The measurements, both absolute and comparative, of length, breadth, and height of each story belonging to each of the fifteen kinds of gate-houses are described at great length. The ornaments and mouldings of each story are also given in detail. The *garbhagṛiha* (cella or sanctum) as well as all other rooms together with their different parts, such as pillars, entablatures, walls, roofs, floors, doors, and windows, etc. are exhaustively discussed.

The measurements, etc., of the gate-houses are discussed in comparison with those of the main building also. Then follows a lengthy and partly obscure description of their solid (*ghana*) and hollow (*aghana*) parts. The description of some interior members is also included in this section.

The chapter closes with an interesting description of windows, not only for gate-houses, but also for other sorts of buildings, both religious and residential. The general plan of windows seems to be this: a post or pillar is fixed in the middle to which are attached two perforated screens (*jālaka* and *phalaka*). These admit of various patterns represented by the following names by which they are classed as regard their shape: *nāgabandha*, *valli*, *gavāksha* (cow's eye), *kuñjarāksha* (elephant's eye), *svastika*, *sarvatobhadra*, *nandyāvarta*, and *pushpabandha* (band or bunch of flowers). They are decorated with floral and foliated ornament, as well as with decorative devices in imitation of jewels. The measurement of length, breadth, and thickness is entirely left to the discretion of the artist. But it is stated in conclusion that according to some authority the width of the windows for gate-houses varies from $1^1/_2$ to 5 cubits (*hasta*), the increment being by six *aṅgulas*.

CHAPTER XXXIV.

The maṇḍapa (*Maṇḍapa-vidhāna*).

The term *maṇḍapa* generally means a temple, pavilion, bower, shed or open hall. But the word has been used in three technical senses in this chapter. It is used to imply a house in a village, etc., or built on the bank of a sea, river, tank, or lake; secondly it is used to imply all the detached buildings in a compound which is generally divided into five courts. But in the most general sense, it implies various sorts of rooms in a temple or residential building. The most part of this long chapter is devoted to the description of these rooms.

After an account of the architectural members indicated by the technical terms *bhitti*, *alinda* and *prapā*, follows the lengthy description of the *maṇḍapa*. Seven *maṇḍapas* are said to be built in front of the *prāsāda* or the main edifice. They are technically called *himaja*, *nishadaja*, *vijaya*, *mālyaja*, *pariyātra*, *gandhamādana*, and *hemakūṭa* respectively. The first is said to be used for the purpose of a bath-room, the second for a study (library or school, *adhyayana*), and so forth. Various parts of these, such as walls, roofs, floors, verandas, court-yards, doors, windows, columns, etc. are described in detail. Besides these seven, various other classes of *maṇḍapas* are also described exhaustively. Their technical names together with the main purposes for which they are built may be summarized here.

The *meruja-maṇḍapa* is used as library-room, the *vijaya* for marriage-ceremonies, the *padmaka* as „a temple-kitchen", the *sicha* as an ordinary kitchen, the *padma* for collecting flowers, the *bhadra* for a waterreservoir, store-house, etc., the *śiva* for unhusking corn, the *veda* for an assembly-hall, the *kuladhāraṇa* for storing perfumes, the *sukhāṇya* for a guest-house, the *dārva* for an elephant's stable, and the *kauśika* for a horse-stable, the *saukhyaka* and others built on the bank of the sea, river, lake, etc. are meant for purposes of pilgrimage, the *jayāla* and others for summer residence. The plan, ornaments etc. of each of these various classes are described in detail.

The chapter closes with the description of the form of *maṇ-*

ḍapas. Those of temples and of the houses of the Brahmins should have the *jāti* shape; the *chhanda* shape is given to the *maṇḍapas* of the Kshatriyas, the *vikalpa* shape to those of the Vaiśyas, and the *ābhāsa* shape to those of the Śūdras. But according to some, these four classes are also said to be based on the form of the *bhadra*.

The *maṇḍapas* of two faces are called *daṇḍaka*, those of three faces *svastika*, the latter may also have the *lāṅgala* shape. The *maṇḍapas* of four faces are known as *chaturmukha*, those of six faces as *maulika*, and those of five faces as *sarvatobhadra*.

A short description of the *maṇḍapas* in a village or town is given at the end. Their principal members are said to be the *lupā*, *prastara*, *prachchhādana*, *sabhā* and *kūṭa* etc. *Maṇḍapas* are also built on the road side and elsewhere.

All classes of *maṇḍapas* mentioned above are separately described, as they may belong to a temple or to the houses of the Brahmins, the Kshatriyas, the Vaiśyas and the Śūdras respectively.

CHAPTER XXXV.

The śālā (*Śālā-vidhāna*).

The distinction between the *śālā*, the *maṇḍapa*, and the *gṛiha*, to each of which a separate chapter is devoted, is not quite clear. The three terms are used more or less in the same sense, to imply houses in general. All of them consist of the same parts and are used for the same purposes. In the compounds *gośālā* (cow-shed), *aśvaśālā* (horse stable), *pāṭhaśālā* (college or school), the word *śālā* indicates a detached building; while in *pākaśālā* (kitchen) etc., it may imply a hall or room. In the present chapter *śālā* is used mostly in the sense of both temples and residential buildings for Brahmins, Kshatriyas, Vaiśyas and Śūdras.

Like villages, *śālās* are first divided into the same six classes, namely, the *daṇḍaka*, *svastika*, *maulika*, *chaturmukha*, *sarvatobhadra* and *vardhamāna*. Some of these with a certain number of halls are said to be temples, while others varying in the number of rooms are meant for the residence of different castes.

A distinction is made with regard to the number of stories they should be furnished with. The maximum number of stories a *śālā* has is twelve. The various stories of all these *śālās* are described in detail. Eleven alternative breadths, eleven lengths and five heights are given to each *śālā*. It should be observed that the width is the standard measurement in Indian architecture; the length and the height being in most cases determined in comparison with the breadth. The height is described here by the general formula indicated by the five technical names *sāntika*, *paushṇika*, *jayada*, *dhanada* (in other places *sarvakāmika*), and *adbhuta*. So many alternatives in measurement are, however, modified by the rules of *āyādi-shaḍvarga* as in all other places.

The plan and characteristics of the six classes of *śālās*, both religious and residential, are described in detail. The various parts, mouldings and ornaments of a *śālā* are the same as those of an ordinary house. Columns, walls, roofs, floors, domes, doors, windows, staircases, arches, arcades etc., are minutely described.

A special feature of the present chapter is the consideration of weather and climate in building a *śālā*. Certain months and seasons are strictly forbidden for this purpose. Astrological and ritualistic considerations form another peculiarity of this chapter. Some classes of *śālās* are said to suit in particular people born under the influence of certain planets and stars.

The chapter closes with the description of the rules of *shaḍvarga* as applied to *śālās*, and with a enumeration of the various parts of a *śālā*.

CHAPTER XXXVI.

The location and measurement of houses
(Gṛihamānasthāna-vinyāsa.)

The main object of the chapter is to describe the arrangement and location of houses in the compound. The breadth of a house is said to be of five kinds, from two or three *daṇḍas* to ten or eleven *daṇḍas*, the increment being by two *daṇḍas*. The length may be equal to twice the breadth. Houses are to be built in

a village, town, port (*pattana*), *kheṭaka*, grove, or hermitage, near a hill or mountain, or on the bank of the river, etc.

In the 34th chapter various sorts of *maṇḍapas* were stated to be located in different parts of the five courts into which the whole compound of a temple was divided. In the present chapter, houses intended for various purposes are located in different squares in which an inhabited area is divided according to the *paramaśādhika* scheme described in the 7th chapter called *Padaviṇyāsa* [1]).

The Brahmasthāna or the central square is stated to be unfit for a residential building. The temple of the family god is generally built in this part. Round this are constructed all other houses — such as the house for the master of the family, for his wife, for the children, servants, for cows, horses, fowls, etc., for kitchen and dining hall etc., for guests, for the library or study, for the daily sacrifices of the upper castes, for amusements and music, for the dancing girls, and for all other domestic purposes. This arrangement of houses is, however, slightly different according to the caste and social position of the family. But the general plan of the houses for a family is the same in all cases.

CHAPTER XXXVII.

The first entry into the house (*Gṛihapraveśa-vidhāna*).

The ceremonies in connection with the opening of and first entry into a house are described in detail. The consideration of an auspicious day and moment, and the worship and sacrifice in this connection are still usually observed in India. The masters of the ceremonies are stated to be the *sthapati* and the *sthāpaka*. They lead the procession in circumambulating the village and the compound before the ceremonial entry into the house. The head of the family and his consort are usually the chief figures in these affairs. After completing the worship and

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[1]) Cf. above p. 6.

sacrifice, the guardian angel of the house (*Gṛiha-Lakshmī*) is prayed to confer male offspring, wealth and long life on the master of the house [1]). After the solemn entrance into the house has been performed, the householder should feed the Brahmins and present the architects and their followers with rich gifts.

CHAPTER XXXVIII.

The doors (*Dvāra-sthāna*).

Doors and gates have already been described on various occasions. Two separate chapters are now devoted to the arrangement, location, measurement, and ornaments of doors to be used in all kinds of buildings. Such a special description of the windows has already been noted at the end of the 33rd chapter on gate-houses (*gopura*).

It is stated in this chapter that four main doors are constructed on the four sides of all kinds of buildings of gods and men. In most cases four smaller doors are also made at the four corners. Many other smaller doors are prescribed at the intervening spaces. Drains (*jaladvāra*) are made underneath the *śālā*.

The main doors are always furnished with a flight of steps. In many buildings, the entrance-door is made, not in the centre of the frontage, but on either side of the middle. But in some houses they may be made in the middle of the front wall. In the case of kitchens, in particular, the main doors must be at the middle of the wall.

It is also stated expressly that, where it is inconvenient to make so many smaller doors, as prescribed here, they should be replaced by windows.

The materials with which doors are constructed are mainly timber; but stone is used in some exceptional cases.

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[1]) The *mantra* to be recited runs: *He Lakshmi gṛihakartāraṁ putra-pautradhanādibhiḥ saṁpūrṇaṁ kuru chāyushyaṁ prārthayāmi namo 'stu te.*

CHAPTER XXXIX.

The measurements of doors (*Dvāramāna-vidhāna*).

The common rule is that the height of a door is to be twice its breadth. But various alternative measurements are also given. The height of the larger doors may vary from $1^1/_2$ cubits (*hasta*) to 7 cubits, the increment being by 6 *aṅgulas*. The height of the smaller doors varies from one cubit to three cubits, the increment being by 3 *aṅgulas*. In the former case we, therefore, have twenty-three, in the latter seventeen varieties of dimension.

These dimensions are prescribed for doors in the *jāti* class of buildings. But other measurements are given to doors in houses of the *chhanda*, *vikalpa*, and the *ābhāsa* classes. The alternative dimensions are modified by the application of the *shāḍvarga* formula.

The door-posts and other parts of the door are then described at great length. Doors are generally two-leafed, but single-leafed doors are also mentioned.

They are profusely decorated with foliated and floral ornament. The images of Gaṇeśa, Sarasvatī and other deities should be carved over the entrance.

CHAPTER XL.

The royal palace (*Rājagṛiha-vidhāna*).

Palaces are divided into nine classes with regard to their size, as they may belong to a king of any of the nine classes enumerated in the next chapter. Each class of palaces, whether of a *chakravartin*, a *mahārāja*, a *narendra*, a *maṇḍaleśa*, etc. admits of nine sizes. For each of the nine main classes it is further laid down, that they should consist of a certain number of halls (*śālā*). Thus the palace of the *chakravartin* or universal monarch should have from one to seven halls; that of the *adhirāja* (or *mahārāja*) from one to six halls; that of the *narendra* from one to five halls, and so forth.

Then the location of the various palace buildings is minutely described on the basis of the *Paramaśādhika* scheme explained in the 7th chapter called *Padavinyāsa*.

The Brahmapīṭha is installed in the Brahmasthāna, the square in the centre. The main palace of each of the nine classes of kings is then located in certain of the remaining squares — Indra, Varuṇa, Yama, Pushpadanta, etc. Among the other palace buildings enumerated we mention the residences of the queens the princesses, and the private council-hall.

Other buildings which are necessary adjuncts of the dwelling of an Indian king are the coronation pavilion (*abhishekādimaṇḍapa*), the arsenal (*āyudhālaya*), the storehouse (*vastunikshepamaṇḍapa*), the house for keeping ornaments (*bhūshaṇālaya*), the dining-hall (*bhojana-maṇḍapa*), the kitchen (*pachanālaya*), the flower pavilion (*pushpamaṇḍapa*), the baths (*majjanālaya*), the bed-chamber (*śayanālaya*) and several more. These all belong to the inner part (*antaḥśāla*) of the palace.

In the outer part (*bahiḥśāla*) are situated, the residence of the crown prince (*yuvarāja*), of the family priest (*purohita*), of the ministers and others, likewise the hall of public audience (*āsthānamaṇḍapa*), temples, etc.

Pleasure gardens, flower gardens, groves, tanks, etc., are assigned their proper places. Stables for horses and elephants, cow-sheds, etc., are generally made near the main gate. Other animals which are kept within the royal enclosure are rams, cocks, deer and antelopes, monkeys, tigers and peacocks. Pavilions to witness ram-fights and cock-fights (*meshayuddhārthamaṇḍapa*, *kukkuṭayuddhamaṇḍapa*) are specially mentioned. The jail (*kārāgāra*) is located in a rather out-of-the-way place, such as the Bhṛiśa, or the Antariksha part. At the end of the chapter it is stated that for the rest the arrangement is left to the choice of the king and to the discretion of the artists.

CHAPTER XLI, XLII.

Characteristics of kings (*Rājalakshaṇa-vidhāna*).

These two chapters, which bear the same title, deal with the classification of kings, the qualities which are required in a good ruler, and so forth.

Kings are divided, in a descending progression of rank, into nine classes, namely, *chakravartin*, *mahārāja* (or *adhirāja*), *mahendra*, *pārshṇika*, *paṭṭadhara*, *maṇḍaleśa*, *paṭṭabhāj*, *prāhāraka*, and *astragrāhin*.

The opening and closing lines of the chapter XLI describe the general qualifications of all kings. They should know philosophy and religion and must be learned in all Śāstras, and in the political, military, civil and moral laws. They should be haughty (*uddhata*), gracious (*lalita*), and generous (*udātta*) in their behaviour. They should have the direct knowledge of and control over the subordinate kings and ministers. They should themselves be great warriors and wise in all matters. The treasury should always be kept full and they should themselves be religious and of strict morals. They should be the protectors of their subjects. They should possess peace of mind, love of fame, good taste in matters of art, and fondness of music (*Gandharva-śāstra*).

Then it is stated of each of the nine classes of kings what should be the number of his horses, elephants, soldiers, women, and queens. The *astragrāhin*, for instance, who is least in rank, is said to possess 500 horses, 500 elephants, an army of 50.000 soldiers, 500 female attendants and one queen (*mahishī*). The *prāhārika*, who follows next, has 600 horses, 600 elephants, 100.000 soldiers, 700 beautiful women and two queens. The highest figures are reached in the case of the *chakravartin* or universal monarch.

Chapter XLI begins with the classification of kings mentioned above. The extent of their kingdoms and some special characteristics of each of the nine kings are then described. The empire of the *chakravartin* reaches as far as the four oceans (*chaturḥsāgara*). He is the suzerain of all subordinate kings. He is strict in his judgment of right and wrong, but protects the

people with kindness and mercy. He is famous and the most fortunate of all. The next king (*mahārāja* or *adhirāja*) is the lord of seven kingdoms. He has the six principal kingly qualities (*guṇa*), the six strengths (*bala*) and the three powers (*śakti*). [1]) He is also versed in politics (*nīti*). He is born either in the Solar or in the Lunar race. The remaining seven classes of kings are similarly described.

A point of great historical interest in this passage is that royalty is no longer the monopoly of the Kshatriyas. A king may belong to any of the four castes — the Brahmins, the Kshatriyas, the Vaiśyas, and even the Śūdras. The *prāhāraka* is expressly stated to belong to any of the four castes.

The nine kinds of crowns which pertain to these nine classes of kings are then described. This subject, however, is more elaborately treated in the 49th chapter (*Abhisheka-lakshaṇa*). Next comes the description of the nine kinds of thrones used by the nine classes of kings. Here other royal insignia, particularly the white umbrella (*dhavalachhattra*) and the chowrie or fly-whisk made of the yak's tail (*chāmara*) are also mentioned. Thrones, it will be noticed, are fully dealt with in the 45th chapter (*Simhāsanalakshaṇa-vidhāna*).

The next point of importance is the rate of royal revenue. The *chakravartin* takes only one-tenth of the produce as his share. The *mahārāja* takes one-sixth, the *narendra* one-fifth, the *pārshṇika* one-quarter, the *paṭṭadhara* one-third; the exact proportions of the other kings' shares are not given. No tax should be illegally imposed. Punishment and fines should be legal and moderate. The temples, as well as the Brahmins, the hermits, and similar people should be supported by the state.

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[1]) The six 'qualities' (*guṇa*) of a king are found in *Manu* VII, 160

saṁdhiṁ cha vigrahaṁ chaiva yānam āsanam eva cha /
dvaidhībhāvaṁ saṁśrayaṃ cha ṣhaḍguṇāṁś chintayet sadā //

"Let him [the king] constantly think of the six measures of royal policy (*guṇa*) viz. alliance, war, marching, halting, dividing the army, and seeking protection." (Bühler, *S. B. E.* XXV, p. 241). But according to another source the six *guṇas* or qualities of a king are valour, energy, firmness, ability, liberality and majesty. The three royal powers (*śakti*) are found *Amarakosha* 2, 8, 1, 19 *śaktayas tisraḥ prabhāvotsāhamantraja* "the three powers come forth from majesty, energy and good counsel."

At the end of the chapter it is stated that the description of kings it contains is made on the authority of the Vedas, the Purāṇas and the Śāstras.

CHAPTER XLIII.

Cars and chariots (*Rathalakshaṇa-vidhāna*).

Cars and chariots are constructed for the ceremonial and ordinary drives of gods, Brahmins, and kings, as well as for war and other purposes. The wheels and other parts of cars, their shapes, their measurements, and their ornaments and mouldings are described in order.

The chapter begins with a minute description of the wheel, the most important part of the car. It is always circular, and is furnished with a strong tyre of similar shape. All its parts, together with their measurements, are described in detail — the *kukshi* (? nave *lit.* belly), the *aksha* (axle), *śikhā* or *danta* (axle-hand), *chhidra* (hole) and the *kīla* (axle-bolt, linch-pin). The particular trees of the timber of which the wheel is to be made are enumerated. On a double support (called *ādhāra* and *upadhāra*) which rests on the axles, is raised a lofty structure which is provided with niches (? *bhadra*) and lavishly decorated. It may have as many as nine stories, the height of each successive story being smaller than that the one beneath. The exact proportion is not given.

The forms of the cars are next discussed. With regard to their shape, the cars are divided into seven classes, — *nabhasvan-bhadraka*, *prabhañjana-bhadraka*, *nivāta-bhadraka*, *pavana-bhadraka*, *pṛishada-bhadraka*, *indraka-* (or *chandraka?*) *bhadraka* and *anila-bhadraka*. The first of these is square, the second hexagonal; the third should have two *bhadras*, and the fourth, three *bhadras*, the fifth and the sixth should have ten *bhadras* and the last one should have twelve *bhadras*.

The description of the different shapes of the cars is rather confusing. According to another classification given here the square cars are called *nāgara*, the octagonal ones *drāviḍa*, the

circular ones *vesara*, the hexagonal ones *andra* (*andhra?*), and the oval ones *āliṅga* (*kaliṅga?*).

The cars, in accordance with the different purposes referred to above, have various kinds of wheels and other members. Thus a fighting car has three wheels, the car for mock-fighting has four wheels; one for ordinary festivals (*nityotsava*) five weels, one for special festivals (*mahotsava*) may have six, seven, eight, nine or ten wheels. In the same manner the number of *vedis* (platforms) varies according to the special purpose for which the car is to be used.

Thus it is stated that the chariot of the universal monarch (*sārvabhauma*) should have one to nine *vedikās*, that of the *mahārāja* one to seven *vedikās*, that of the *narendra* one to five *vedikās*, and so forth. The cars of Vishṇu and Śiva should consist of one to nine *vedikās*, those of the Buddhist and Jain deities of one to seven *vedikās*, and in the case of other gods the number should be four, or one to five.

The cars should be decorated with peacocks' feathers, chowries, arches (*toraṇa*), little bells, bright mirrors, fans and garlands. They should also be carved with the images of various deities, particularly the upper part of the structure, whereas the basement is adorned with representations of lions, elephants and crocodiles (*harikarimakararūpaiḥ*), with foliated ornament and with figures of dancers (*nāṭaka*), *bhūtas* and *yakshas*.

CHAPTER XLIV.

Couches (*Śayana-vidhāna*).

Couches are meant for the use of the deities, the twice-born, and members of other castes. They are said to be of two kinds - the small (*bālaparyaṅka*) and the large (*paryaṅka*), the one being distinguished from the other by its size alone.

The measurement and various parts of the two kinds of couches are described separately. The width of the *bālaparyaṅka* may vary from 11 to 25 *aṅgulas*, the increment being by 2 *aṅgulas*. This makes eight varieties. The *paryaṅka* proper admits of nine

varieties, as they may be from 21 to 37 *aṅgulas* in width with increments of 2 *aṅgulas*.

It may be pointed out that they are generally furnished with four legs, and small wheels are attached to the legs so that they may easily be moved from one place to another. The legs of royal couches should be decorated with lions. The proportion of breadth to length shows that couches are generally rectangular in shape.

Special mention is made of swings suspended from four chains which are said to be used by the gods, the Brahmins, the Kshatriyas, etc.

The material of which couches and seats (*āsana*) are constructed is the wood of certain timber-trees. For the legs special kinds of timber are recommended.

CHAPTER XLV.

The thrones (*Siṁhāsana-lakshaṇa-vidhāna*).

The expression *siṁhāsana* implies a seat marked with a lion. This lion-seat or throne is made for the use of deities and kings. Royal thrones are divided into four classes. The *prathamāsana* is said to be fit for the first (*prathama*) coronation, the *maṅgala* throne for the coronation of the same name. The *vīra* throne for the *vīra*-coronation and the *vijaya* throne for the *vijaya*-coronation. What is evidently meant is that these four thrones are employed for the four successive stages of the coronation of one and the same king.

As for deities, the *nityārchana* throne, as the name indicates, is used for daily worship, the *nityotsava* throne for ordinary festivities; the *viśeshārchana* throne for special worship; and the *mahotsava* throne for great festivals.

Next comes a further division of thrones into ten kinds. The descriptions of the general plan as well as the measurements of the various parts of them are given in detail. They are technically called — *padmāsana*, *padmakesara*, *padmabhadra*, *śrībhadra*, *śrīviśāla*, *śrībandha*, *śrīmukha*, *bhadrāsana*, *padmabandha* and

pādabandha. Nine kinds of dimensions are given to each of the above mentioned thrones. But the right proportion in each case is to be selected by the application of the rules of *shaḍvarga*.

Of the ten kinds, the first, *padmāsana*, is used as the throne for Śiva or Vishṇu, the *padmakesara* for the [other] gods and for the *chakravartin*, the *padmabhadra* for the *adhirāja* (i. e. the *mahārāja*); the *śrībhadra* is fit for the *adhirāja* and the *narendra*; the *śrīviśāla* is fit for the *narendra* and the *pārshṇika*; the *śrībandha* is fit for the *pārshṇika* and the *paṭṭadhara*; the *śrīmukha* for the *maṇḍaleśa*; the *bhadrāsana* for the *paṭṭabhāj*, the *padmabandha* for the *prabhākara*, and the *pādabandha* throne is fit for the *astragrāhin*. [1]) It is expressly stated that the lion-shaped legs should not be made for the throne of the last-mentioned class of kings. But in the case of all other kings, the thrones are marked with lions and furnished with six legs. They are generally made facing the east. But the thrones of deities should face the four quarters.

At the end of the chapter the author says that the "thrones of Vishṇu, Rudra, Jinaka, Indra, and all the [other] prominent gods and also of the kings have thus been described." It deserves, however, notice that in the description itself no reference whatever is made to thrones of Buddhist or Jain deities, as the term Jinaka would seem to imply.

CHAPTER XLVI.

The arches (*Toraṇa-vidhāna*).

The *toraṇa* [2]) or arch is stated to be an ornament for the thrones (*āsana*) of gods and kings. It is supported on dwarf pillars (*aṅghri*) which rest on the pedestal (*pīṭha*) of the image. The ornamental arch admits of various shapes. It may be cir-

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[1]) On the classification of kings into nine classes cf. above p. 34.

[2]) It will be noticed that the present chapter deals only with the arch as a decorative device of images, not with the well-known structural *toraṇa* of ancient Buddhist architecture. Cf. James Fergusson, *History of Indian and Eastern architecture*, revised and edited by James Burgess and R. Phené Spiers, London 1910. Vol. I, pp. 102—124.

cular, triangular(?), crescent-shaped, bow-shaped or of an arbitrary form. The directions for making these arches as well as the measurements of their constituent parts are given in detail. With regard to their ornamentations, arches are divided into four kinds technically called *patra-toraṇa* (foliated arch), *pushpa-toraṇa* (floral arch), *ratna-toraṇa* (jeweled arch), and *chitra-toraṇa* (ornamental arch).

The various ornaments of arches are then described in detail. The top of the *toraṇa* should be decorated with the figures of the heavenly musicians Tumburu and Nārada, while *makaras* [1]) are placed at the sides. The arch is supported by leogryphs (*vyāli*) which are found on both sides of the pillars. For the rest, the *patra-toraṇa* as the name indicates, is mainly adorned with foliated ornament, the *pushpa-toraṇa* with flowers, and the *ratna-toraṇa* with jewels. Among the other decorative devices mentioned we find the effigies of different classes of semi-divine beings, such as *yakshas*, *vidyādharas*, *kinnaras* and *kinnarīs*. [2]). At the end of the chapter it is said that arches may also be made without any ornament (*chitra-hīna*).

CHAPTER XLVII.

The madhyaraṅga (*Madhyaraṅga-vidhāna*).

The present chapter deals with an architectural member called *madhyaraṅga*, the exact meaning of which is not clear. In the first verse we meet with the expression *muktāprapāṅga* which appears to be used in the same sense as *madhyaraṅga*. It is provided with dwarf pillars or pilasters (*aṅghripada*), consists of various other members (*masūraka*, *vedi*, *mañcha*, *kuṭṭima*, *upapīṭha* etc.) and should be decorated with *uttaras*,

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[1]) Cf. HENRY COUSENS, *The makara in Hindu ornament. Annual Report Archaeological Survey of India.* 1903—04, pp. 227 sqq.

[2]) The *kinnara* (fem. *kinnarī*) is a hybrid creature with human bust, while the lower part of the body is that of a bird. Cf. GRÜNWEDEL. *Buddhist art in India*, revised by JAMES BURGESS, pp. 46 sqq.

vājanas, mushṭibandhas and *lupās.* [1]) It should be furnished with four *bhadras* (or with one *bhadra*) and with eight or sixteen *kshudranāsīs.* The upper portion is adorned with figures of leogryphs (*vyāli*) and crocodiles (*makara*). From the last but one verse of the chapter (which is composed in the *vasantatilaka* metre) it is evident that there must be a close connection between the *muktāprapāṅga*, on the one hand, and the *simhāsana*, the *makaratoraṇa*, and the *kalpavṛiksha*, on the other hand, the latter three subjects being discussed in the two immediately preceding and the next chapters. The verse in question runs as follows:

simhāsanam makaratoraṇakalpavṛikshaṁ
muktāprapāṅgam api dārushileshṭakādyaiḥ
ratnair anekabahulohariśeshakaiścha
kuryān manoharatara chāpavasolabhaktyā

From this verse, (the fourth *pāda* of which is corrupt) it will be seen that the materials to be used for the *muktāprapāṅga* etc. are wood, stone, brick (terra-cotta?) and various kinds of metal (*loha*, lit., iron).

CHAPTER XLVIII.

The ornamental tree (*Kalpavṛiksha-vidhāna*).

The name of the chapter is *Kalpavṛiksha*, which literally means a mythical tree granting all wishes or, in other words, an all-productive tree. But here it is undoubtedly a decorative device surmounting a seat (*āsana*) or throne. It is also found in connection with the *muktāprapāṅga*, the *maṇḍapa*, and the *makaratoraṇa.*

The minute description and measurement of all the various parts of the tree are given. Its trunk (*pāda*) is wound with a serpent, with expanded five-fold hood. The measurements of the snake, of its hood, and of its tail are described in detail. The number of branches as well as their size varies according to the special purpose of the throne, for the decoration of which the

[1]) Cf. above p. 20.

tree is meant. The tree is beautifully decorated with creepers, leaves, and flowers of various colours and forms. Jewels and garlands of pearls are inserted in suitable places. The figures of deities, *siddhas*, *vidyādharas*, monkeys, etc. are placed in the intervals between the branches.

Many other particulars regarding this ornamental tree are left to the discretion of the artist.

CHAPTER XLIX.

The crowns and coronation (*Abhishekalakshaṇa-vidhāna*) [1]).

The chapter is divided into two parts: the first part describes the crowns of gods and kings, and the second deals with the ceremonies of the coronation of kings.

It opens very unusually with the description of the lavish presents to be made to the artists. These gifts consist, among other things, of girls, wealth, land, houses, and servants, both male and female.

After this introduction there follows an enumeration of the various head-dresses used by gods and kings, namely, *jaṭā*, *mauli*, *kirīṭa*, *karaṇḍa*, *śirastraka*, *kuṇḍala* (*kuntala* ?), *keśabandha*, *dhammilla*, *alaka*, *chūḍā*, *makuṭa*, and *paṭṭa* (turban).

Of these the last-mentioned is subdivided into three kinds called foliated, jeweled and floral turbans (*patra-paṭṭa*, *ratna-paṭṭa*, and *pushpa-paṭṭa*).

The *jaṭā* (matted hair) and the *makuṭa* (lit. diadem) are said to suit Brahmā and Śiva. The *kirīṭa* and *makuṭa* are suited to Nārāyaṇa (i. e. Vishṇu).

Other minor gods wear the *karaṇḍa* and *makuṭa*. The love-goddess Rati (Manonmanī) wears a *jaṭā*, *mauli*, *maṇḍala* or *kuṇḍala*. Sarasvatī and Sāvitrī put on a *keśabandha* and a *kuṇḍala*. All the female deities may wear a *karaṇḍa* or *makuṭa*. Among the kings [2]), the *chakravartin* (*sārvabhauma*) and the *adhirāja* wear the *kirīṭa*. The *narendra* puts on a *karaṇḍa*, the *pārshṇika*

1) Cf. *Bṛihat-saṃhitā*, XLVIII. Kern's *Verspr. Geschr.* vol. I, pp. 311 sqq.
2) On the nine classes of kings cf. above p. 33.

a *śirastraka*. But the *chakravartin* and other kings may wear a *karaṇḍa* or *makuṭa*. The *patra-paṭṭa* is suited to the *paṭṭadhara*, the *ratna-paṭṭa* to the *pārshṇika*, the *pushpa-paṭṭa* to the *paṭṭabhāj*, and the *pushpamālya* (flower wreath) to the *prāhāraka* and the *astragrāha* [1]).

The *kuṇḍala* (*? kuntala*) and *makuṭa* are prescribed for the queen of a *chakravartin*; the *keśabandhana* for the queens of an *adhirāja* and a *narendra*, the *dhammilla* and *kumuda* for queens of a *pārshṇika*, a *paṭṭadhara*, a *maṇḍaleśa* or a *paṭṭabhāj*, and the *alaka* and *chūḍā* for the queens of an *prāhāraka* or *astragrāha*.

The height of a crown varies with the importance of the divine or royal bearers, as is set forth at considerable length. Next is described in detail the number of gold pieces and precious jewels in the crowns worn by the kings of various ranks and by their consorts. The forms of these crowns are then described.

The second part of the chapter deals with the royal coronation (*abhisheka*). In the coronation ceremonies of the *chakravartin* and other kings four stages are prescribed which are called *prathama* (here called *prāpta*), *maṅgala*, *vīra*, and *vijaya* [2]). But they are not clearly distinguished. In this matter, too, the artists take a leading part. The *sthapati*, the *sthāpaka* and the Brahmin priest perform the *aṅkurārpaṇa* and all other ceremonies ending with the *adhivāsana*. Afterwards the king is anointed with various auspicious substances. This is the coronation or *abhisheka* proper. The king is then adorned with the royal robes, the sacred thread, and various ornaments, and led to the coronation hall (*abhishekamaṇḍapa*) which is furnished with the *madhyaraṅga*, the royal thrones, the wishing-tree (*kalpavṛiksha*), the ornamental arch (*toraṇa*), and other emblems of empire [3]). The king and the queen take place side by side on their thrones, the latter being on the

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[1]) Elsewhere these two are called *prabhākara* and *astragrāhin*.

[2]) Cf. above p. 38.

[3]) Cf. HULTZSCH, *South Indian Inscriptions*, vol. I p. 54, ll. 23—25, where in an Eastern Chalukya grant the *makaratoraṇa* is mentioned among the royal insignia. Professor HULTZSCH quotes SANDERSON's *Canarese Dictionary*, where the word is explained as 'an honorary wreath or string of flowers, etc., raised upon poles and carried in front of one, as an emblem of distinction'.

left side of the king. The crown is held by the leading priests (*purohita-purogāḥ*); but it is actually placed on the king's head by the *sthapati* and the two *sthāpakas* on an auspicious moment among the pronouncement of *svasti* and other auspicious sounds. After this the king is garlanded, anointed and besprinkled with various substances of good augury. Afterwards the king mounts an elephant and circumambulates the city among proclamations of felicity. On the occasion of the entry into the palace, a curious ceremony takes place in order to determine the success awaiting the new king, as well as the future prosperity of the kingdom. Various auspicious and inauspicious things are arranged in a hall in the palace. The king is led there blind-folded and has to pick up anything he chooses. The thing thus picked up by the blind-folded king points to the prosperity of the people, victory of the king, or the opposite.

„If the rice porridge or rice be touched [by him], there will be an increase of rice. If the heap of corn is touched by the [royal] hand, there will be plenty of food (*subhikṣha*). If gold and other precious metals be touched, it indicates that the subjects will prospor. If the sword or other weapons be touched, it bespeaks the king's prowess. It would be unfortunate for the whole kingdom, if any in auspicious things be touched by the king."

The chapter closes with the recapitulation of the four forms of coronation, the directions as to the conduct of the ceremonial regal procession, and a reference to the authorities (Vedas and Purāṇas), by which the coronation ceremonies are prescribed.

CHAPTER L.

The ornaments (*Bhūshaṇalakshaṇa-vidhāna*).

In the first verse it is announced that the chapter is devoted to the description of the ornaments of gods and kings. But in reality only the first part of the chapter deals with ornaments proper, whereas the remaining portion deals with certain miscellaneous articles, such as lamp-posts, fans, mirrors, swings,

and so forth, which we should hardly reckon to belong to the same category.

The Mānasāra calls the former 'ornaments of the body' (*aṅga-bhūshaṇa*) and the latter 'external ornaments' (*bahirbhūshaṇa*).

Ornaments proper are here divided into four classes, namely, *patra-kalpa*, *chitra-kalpa*, *ratna-kalpa*, and *miśrita*. All these are suited to the deities. The emperor or universal monarch (*chakravartin*, *sārvabhauma*) can put on all these four kinds of ornaments, except the *patra-kalpa*. The *adhirāja* and *narendra* can wear both the *ratna-kalpa* and the *miśrita* kinds. The *miśra-kalpa* is prescribed for all other kings.

The *patra-kalpa* ornaments are so called, because they show foliated decoration. The *chitra-kalpa* kind consists of floral and foliated designs, precious stones, and *nāṭaka* (?). The *ratna-kalpa* variety is made of flowers and jewels. And the *miśra-kalpa* decoration consists of leaves, jewels, in short, the mixture of all others. These four kinds, it should be observed, are specially made for the images of gods and kings only.

The following is a list of the personal ornaments mentioned in the course of the chapter:

kirīṭa a diadem, a crown.
śirovibhūshaṇa a head-ornament.
chūḍāmaṇi a crest-jewel.
kuṇḍala an ear-ring.
tāṭaṅka (or *tāḍaṅka*) a kind of ear-ornament.
makarabhūshaṇa an ear-pendent decorated with *makaras* (or *makarāṅkita-kuṇḍala*).
kaṅkaṇa a bracelet.
keyūra, *kaṭaka* a bracelet worn on the upper arm.
valaya a bracelet worn round the upper arm (*? bāhumūle*) or on the fore-arm (*prakoshṭha*).
maṇibandhakalāpa [1]) a jeweled ornament worn on the fore-arm.
kiṅkinīvalaya a bracelet (or anklet) decorated with little bells.
aṅgulīyaka a finger-ring.
ratnāṅgulīyaka a jeweled finger-ring.

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[1]) Cf. *muktā-kalāpa* (*Kumāra-sambhava* I, 43).

hāra [1]) / *ardhahāra* } a string of pearls worn round the neck.
mālā a garland or necklace hanging down from both shoulders.
vanamālā a garland of wild flowers (?)
nakshatramālā [2]) a necklace of 27 pearls.
dāman a garland or string worn under the armpits.
stanasūtra / *suvarṇasūtra* } a cord or chain worn round the breasts.
purasūtra (?) a cord or chain worn round the chest (?)
udarabandha a girdle worn round the waist.
kaṭisūtra a cord or chain worn round the loins.
mekhalā a girdle, a belt.
suvarṇa-kañchuka a golden cuirass (or bodice?)
nūpura, valaya an anklet.
pādajāla-bhūshaṇa a net-like ornament worn on the feet [3]).

The following articles, which are reckoned to belong to the 'external' ornaments (*bahirbhūshaṇa*), are described in great detail:

1) the *dīpa-daṇḍa* (lamp-post); 2) the *vyajana* (fan); 3) the *darpaṇa* (mirror); 4) the *mañjūsha* (basket, chest, box); 5) the *dolā* (swing, or palanquin); 6) the *tulā* (balance) of kings; and 7) the *pañjara* (cage), *nīḍa* (nest), for domestic animals and birds.

The lamp-posts (*dīpa-daṇḍa*) [4]) are of two kinds, the stationary, placed in front of the house, and the movable. The former kind of posts are made of wood, iron, or stone; the latter of wood or iron. They may be square, octagonal, or circular in shape. The *vedikā* (platform) or the pedestal at the bottom of these is

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[1]) According to *Bṛihatsaṁhitā* LXXXII, 32 a chain of 108 strings is styled a *hāra* and a chain of 64 strings an *ardhahāra*. KERN's *Verspr. Geschr.* vol. II, p. 101.

[2]) A *nakshatramālā* (*lit.* a star-cluster) consists of 27 pearls in accordance with the number of *nakshatras* or lunar mansions. Cf. *Bṛihats.* LXXXII, 34.

[3]) A few more terms of uncertain meaning are mentioned, namely: *viśeshika (= tilaka?)*, *bālapaṭṭa*, *chūlikā*, *pūrimā*, *késakūṭaka*, and *mallikā*.

[4]) In literature we find the evidently synonymous expression *dīpavṛiksha* (*lit.* lamp tree). *Mahābh.* XII, 7204; XIV, 1737. *Rām.* (ed. GORRESIO) II, 5, 18; *Buddhacharita* (ed. COWELL), V, 44. Monumental lamp pillars of stone, now-a-days designated by the name of *dīp-dān*, are found especially in the South of India. Cf. FERGUSSON, *History of Indian and Eastern architecture.* Revised edition, vol. I, pp. 347 sq. and II 81.

generally shaped like a lotus. The lamp-posts generally taper from the bottom upwards. Various other parts and also the mouldings of lamp-posts are described in detail. The measurements are also given.

The fan-post (*vyajana-daṇḍa*) as well as the fan itself is described in a like manner. These posts are made of timber or iron; but the fans appear to be made of leather. The description on the whole, however, does not convey a very clear idea of the appearance of the objects in question.

Nine alternative measurements are prescribed for the mirror, namely, from 5 (or 6) *aṅgulas* up to 21 (or 22) *aṅgulas*. Mirrors should be quite circular (*suvṛitta*) with the edge a little raised. The surface must be perfectly bright, the rim being decorated with linear ornament (*rekhā*) and the reverse with the figures of Lakshmī and others. The description of the various parts is given in detail.

Three kinds of *mañjūshas* are described in detail. They are made of either timber or iron and shaped square, rectangular or circular. They generally consist of one, two, or three compartments or chambers (*koshṭha*). The *paṛṇa-mañjūsha* looks like a box or trunk. The *taila* (oil) *-mañjūsha* is apparently a receptacle of oil. It does not differ from the other, except in its greater height. The third kind is called *vastra-mañjūsha* and is easily identified with a wardrobe or linen-chest. Its breadth is said to vary from one to three cubits, the height and length being proportionate to the breadth.

The word *dolā* means both a swing and a palanquin. But as the description opens with the statement that the height of the post or pillar (*pāda*) varies from three to eight cubits, there can be little doubt that the passage refers to a swing, although the exact meaning of the other technical terms (*bhitti*, *vājana*, *valaya*, *vāraṇa*. *nirgala*) connected with it is by no means clear. We may assume that the *phalaka* which is repeatedly mentioned in this connection must be the swing-board. The swing is said to be used by gods and men.

The balance [1]) consists of the horizontal balancing rod or beam,

[1]) From the rather obscure description given in the text it may be conjectured that 'the royal balance' in question was meant to be used by the

the strings by which the scale pans are suspended, and the scale pans themselves. The two pans are made of iron, the rod of timber or iron, and the *jihvā* (lit. tongue) and the *toraṇa* (lit. arch) are always made of iron. The various parts of the balance are described minutely together with their measurements.

A large portion of the chapter is devoted to the description of cages (*pañjara*). A number of birds and other animals are enumerated, and the size of the cage in which they are kept is given, the measurements admitting in each instance of nine different varieties. The following is a complete list: —

	Size of cage.		Increment.	
mṛiganābhi-biḍāla (musk cat?)	1—2	*hastas*	3	*aṅgulas.*
śuka (parrot)	9—23	*aṅgulas* [2])	2	„
chātaka (cuculus melanoleucus)	7—23	„	2	„
chakora (perdix rufa) . . .	7—23	„	2	„
marāla (kind of goose or duck)	7—23	„	2	„
pārāvata (turtle dove) . . .	7—23	„	2	„
nīlakaṇṭha (peacock?) . . .	25—73	„	6	„
kuñjarīya (?)	5—21	„	2	„
khañjarita (?)	7—23	„	2	„
kukkuṭa (cock)	15—31	„	2	„
kulāla (phasianus gallus) . .	15—31	„	2	„
nakula (mongoose, viverra ichneumon)	11—27	„	2	„
tittiri (partridge)	7—23	„	2	„
godhāra (?) [3])	9—25	„	2	„
vyāghra (tiger)	1½—3½	*hastas*	6	„

kings in performing the curious ceremony of having themselves weighed against their own weight in gold and precious stones which were afterwards distributed among the Brahmins. This ceremony, known as *tulāpurushadāna* was performed on certain special occasions such as their coronation, or on the day of a solar or lunar eclipse, or on New Year's day. Cf. A. H. LONGHURST, *The tulāpurusha-dāna monument at Hampi. Annual Report Archaeological Survey of India* for 1912—13, pp. 142 sqq., plate LXXXIV.

[2]) Evidently there is here a mistake in the figures, which would yield only eight varieties of size.

[3]) It is not clear what animal is indicated by the word *godhāra.*

CHAPTER LI.

The triad (*Trimūrti-lakshaṇa-vidhāna*) [1]).

The Indian Triad, to which the title of the chapter refers, consists of the three great gods Brahmā, Vishṇu and Śiva. The chapter may be divided into two parts. The first part deals with the materials (*dravya*) of which the idols of these three deities as well as all other images are made. The second part describes the external features of the Triad.

The materials for making idols are nine, namely, gold, silver, copper (*tāmra*), stone, wood, *sudhā* (stucco; also mortar and plaster), *śarkarā* (*lit.* gravel or grit), *ābhāsa* (marble?) and earth (terra-cotta). All the materials enumerated are well known except *ābhāsa*, of which a special description is given.

Ābhāsa is subdivided into three kinds, called *chitra*, *ardhachitra*, and *ābhāsa* proper. If it is perpectly transparent (*sarvāṅgadṛiśyamāna*, *lit.*, which can completely be seen through) it is called *chitra*; if only half transparent, it is known as *ardhachitra*; and in case it is partially (*lit.* one fourth) transparent, it is called *ābhāsa* proper. This description, however, does not help us to identify *ābhāsa* with any certainty. It may have some affinity to crystal, but the latter has been referred to elsewhere by its own common name, *sphaṭika*. The ordinary meaning of the word *ābhāsa* is splendour, light, transparency. It implies undoubtedly a transparent substance. I am inclined to think that it may refer to some particular and more or less transparent variety of marble (alabaster?) of which various other kinds, such as white, black, red, yellow, etc., are described in the next chapter in connection with the materials of which the *pīṭha* or *yoni* part of the phallus (*liṅga*) of Śiva is made.

The second part begins with the different classes of images. An idol may be stationary (*sthāvara*) or movable (*jaṅgama*); erect, sitting or recumbent. The movable images are used especially on the occasion of festivals. The three or four poses (*bhaṅga*),

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[1]) Cf. *Annual Report Archaeological Survey of India* for 1913—14, pp. 277 sqq.

called *ābhaṅga*, *samābhaṅga*, *atibhaṅga*, and *tribhaṅga*, are discussed more fully at the end of chapter LXVII.

The remaining portion of the chapter is devoted to a minute description of the images of Brahmā, Vishṇu and Śiva, the three gods constituting the *Trimūrti*.

Brahmā should have four arms and four faces. He should wear a diadem and the matted hair of an ascetic (*jaṭā-mukuṭa-maṇḍita*). Two of his hands should be in the gift-bestowing (*varada*) and refuge-granting (*abhaya*) attitude. The four attributes held in his hands are the water-pot (*kuṇḍika*), the rosary (*akshamālā*), and the large and small sacrificial ladles (*sruk-sruva*). The various ornaments with which his body is to be adorned are described in great detail. As to his clothes, he is said to wear a strip of bark (*chīra*) and an upper garment (*uttarīya*). His whole body should be of golden colour. Brahmā is accompanied by his two Śaktis (female energies), the goddesses Sarasvatī and Sāvitrī, standing to his right and left respectively.

Vishṇu is also four-armed (*chaturbhuja*), but has one head. His head-gear is the diadem called *kirīṭa*. He wears a yellow garment, while the colour of his body is dark blue (*śyāma*). His chest is adorned with the symbol called *śrīvatsa*. Two of his hands are in the gift-bestowing and refuge-granting attitude. His attributes are the lotus-flower, the mace (*gadā*), the discus (*chakra*), and the conch-shell called *Pañchajanya*. Among the numerous ornaments which bedeck his limbs, special mention is made of the graceful garland of wild flowers (*vanamālā*) which hangs down by both his legs. At the back of his head there is an ornamental nimbus (*śiraśchakra*, lit. a head-disc). Vishṇu is likewise attended by two goddesses (*Śakti*), apparently Lakshmī and Bhū-devī (the Earth-goddess) [1]).

Śiva, the third member of the Triad, is four-armed and is, moreover, distinguished by a third eye which is placed in the middle of his fore-head. Like Brahmā, he wears the matted hair of the ascetic. The figure of Gaṅgā (the personified river) as well as the crescent are inserted in his head-dress, the latter on the left side. On the left side of his neck there is the mark of the

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[1]) The text is corrupt, but cf. *Annual Report Archl. Survey* for 1913—14, p. 45.

deadly poison *kālakūṭa*. His dress consists of a tiger-skin reaching down to the knees, and a waist-cloth. His complexion is said to be red [1]). Two of his hands are in the attitudes of granting a boon (*vara*) and of conferring security (*abhaya*). In the remaining two hands he holds an antelope (*hariṇa*) and a tabor or hand-drum [2]). Śiva is accompanied by the goddess Pārvatī, who is standing or seated on his left hand.

Images of the three members of the Triad are said to be measured in the largest type of the *daśatāla* measurement and those of their consorts in the middle type. The particulars of these two types of measurement are not discussed here, but reserved for an elaborate treatment in two separate chapters.

The pedestals are also dealt with in a separate chapter. Here it is very briefly stated that the pedestals of the Triad should be of the *padma-pīṭha* or the *mahā-pīṭha* kind, and be furnished with a *prapā*, a *toraṇa* (ornamental arch), and a *kalpavṛiksha* (ornamental tree).

The chapter closes with a statement that the particulars, not mentioned here, with regard to the making of these idols, should be supplied according to the rules of the Śāstras.

CHAPTER LII.

The phallus (*Liṅga-vidhāna*) [3]).

Various classifications of phalli are given. They are classified firstly into six heads — *śaiva*, *pāśupata*, *kālāmukha*, *mahāvrata*, *vāma*, and *bhairava*; secondly into four — *samakarṇa*, *vardhamāna*, *śivāṅka* and *svastika*, fit to be worshipped by Brahmins,

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[1]) Elsewhere the complexion of Śiva is stated to be white.

[2]) The name of the second attribute which occurs also in the iconographical portion of the 7th chapter, appears to be *ḍhakkā*. But this word usually indicates a large kettle-drum, whereas the tabor which is one of Śiva's emblems is called *ḍamaru*. Or are we to read *ṭaṅka*?

[3]) The phallus worship is very popular in India: this is unmistakably proved by the fact that the number of *liṅgas* or phalli in India is estimated at thirty millions, of which the best known are Viśveśvara at Benares, Somanātha in Gujarat, Mahākāla at Ujjayinī, etc. etc.

Kshatriyas, Vaiśyas and Śūdras respectively; thirdly into four with regard to height — *jāti*, *chhanda*, *vikalpa*, and *ābhāsa*; fourthly into three types, with regard to width — *nāgara*, *drāviḍa*, and *vesara*; fifthly into four — *daivika*, *mānusha*, *gāṇava*, and *ārsha*, the four together being called *svayaṁbhū* [1]) or *udbhūta*; sixthly into two — *ātmārtha* (for one's own worship); and *parārtha* (lit. for others, for public worship); again into two — *ekaliṅga* (single), and *bahu-liṅga* (phalli in a group); or into many kinds — *vajra*, *suvarṇa* etc. with regard to the material; and lastly into two — *kshaṇika* (for temporary worship) as contrasted with the permanent *liṅga*. All these kinds of phalli are described at great length. Various alternative measurements are prescribed for each of them. In some cases as many as thirty-six alternative heights are suggested. But in most cases their number is nine. The nine alternative heights of a phallus are determined in some cases by a comparison to different parts of the body of the worshipper (*yajamāna*). The height of the phallus may reach the worshipper's penis, navel, heart, breast, arm-joint (*bāhusīmānta*), chin, nose, eye, or be equal to his full length. Another comparative measurement is given with regard to the *garbhagṛiha* (the cella of the temple in which the phallus is enshrined). Various absolute measurements are given in some cases. These measurements vary according to the four classes *jāti*, *chhanda*, *vikalpa*, and *ābhāsa*, mentioned above. In the *jāti* class the height may vary from 1 to 9 cubits (*hasta*), the increment being 1 *hasta*. The *chhanda* class admits of nine varieties, namely from $^3/_4$ to $6^3/_4$ cubits, the increment in this case being $^3/_4$ *hasta*. In the third class (*vikalpa*) the height differs from 1 to $4^1/_2$ *hastas* with increments of $^1/_2$ *hasta*, and in the fourth class (*ābhāsa*) from $^1/_4$ to $2^1/_4$ *hastas* with increments of $^1/_4$ *hasta*. Thus each of the four said classes admits of nine varities of height. The breadth of the phallus is in like manner discussed at great length. The impracticability of so many alternative measurements is, however,

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[1]) The term *svayaṁbhū* (self-existent, self-created) indicates natural objects of worship. Such *svayaṁbhū-liṅgas* are still to this day worshipped at several *tīrthas* of Kaśmīr. Cf. *Kalhaṇa's Rājataraṅgiṇī, a chronicle of the kings of Kaśmīr*, transl. by M. A. Stein, vol. I, p. 22 (note at I, 113).

removed by the application of the rules of *āyādi-shaḍvarga* which are described in detail at the end of the chapter.

The second part deals with the *pīṭha*, which is the stand upon which the phallus proper is placed. The *praṇāla* (*lit.* canal, drain) or *yoni-dvāra*, and all other parts of the *pīṭha* are described in detail, together with their measurements. The same subject is discussed in greater detail in the next chapter. The general appearance of a phallus is well-known. The Mānasāra does not deviate much from it. The *mūla* or the lower part, technically called *Brahma-bhāga*, says our author, is square (*chaturasra*, lit. four-cornered), whereas the middle part, called *Vishṇubhāga*, is octagonal (*ashṭāgrābha*), and the upper part, called *Śiva-bhāga*, is round. But these shapes of the three parts may interchange in some cases. The top is sometimes shaped like a bud (*kuḍmala*) or a leaf (*pattra*) [1].

The phallus proper and the *pīṭha* are generally made of the same material. But when they are made of very precious substances, such as jewels, gold, etc., the material of the two may differ. The *pīṭha* is mostly made of marbles of various colours such as white, red, yellow, black, etc. Precious stones are inserted in the different parts of the phallus.

The chapter closes with a description of the various fruits to be derived from phallus worship, and with the formula of the *āyādi-shaḍvarga*.

CHAPTER LIII.

The pedestal [of the phallus] (*Pīṭha-lakshaṇa-vidhāna*).

It has been pointed out in the previous chapter that the *pīṭha* [2]) forms the *yoni* or the lower part of the phallus. The *pīṭha* must

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[1]) A variant reading gives *chhattra* (= an umbrella).

[2]) The term *pīṭha* means a stool, seat, chair, throne, pedestal, altar. The well-known fifty-one *Pīṭha-sthānas* are the sacred spots where the limbs of Satī (Pārvatī), the consort of Śiva, fell after she had been cut to pieces by the discus of Vishṇu. As the *liṅga* or phallus symbolically represents Śiva, so the *pīṭha* does his consort Pārvatī.

match the phallus of which it forms the lower member. There must, consequently, be as many kinds of *pīṭhas*, as there are of phalli. But the mouldings of the *pīṭha* are described under four classes, technically called, *bhadrapīṭha*, *śrībhadra*, *śrīviśāla*, and *upapīṭha*. The principal parts of the *pīṭha* are the *nāla* (*lit.* canal), the *jala-dhārā* (*lit.* drain), the *ghṛita-vāri*, the *nimna*, and the *paṭṭikā*. These are, it may be observed, the various parts of which an ordinary *yoni* is formed. The names of the principal mouldings are the following: *prathama* or *janman*, *padma*, *kshepana*, *kandhara*, *kampa*, *ūrdhva-padma*, *rājana*, *ghṛita-vāri* and *vṛittakumbha*.

The minute description and measurement of all these and other mouldings of *pīṭhas* of various kinds are given in detail. With regard to their shape, the *pīṭhas*, like the phalli (and, in fact, all other architectural and sculptural objects), are divided into three types *nāgara*, *drāviḍa*, and *vesara*. The *pīṭhas* of the *nāgara* class are said to be square, those of the *drāviḍa* type are octagonal, and the *vesara* ones, round (*vṛitta*).

CHAPTER LIV.

The female deities (*Śakti-lakshaṇa-vidhāna*).

The following female deities are specially described: Sarasvatī the goddess of learning, Sāvitrī, Lakshmī the goddess of wealth or fortune, Mahī the earth-goddess, Manonmanī the goddess of love, Durgā, and the „the seven Mothers" (*Saptamātṛi*) collectively so-called. Of these, Lakshmī is distinguished into Mahā- or the great Lakshmī, and Sāmānya, the ordinary Lakshmī, the latter to be installed in all the family chapels. „The seven Mothers" consist of Vārāhī, Kaumārī, Chāmuṇḍā, Bhairavī, Māhendrī, Vaishṇavī, and Brahmāṇī. These seven goddesses are measured in the *navatāla* system, all other female deities in the *daśatāla* system. The details of these measurements are discussed in two separate chapters in which the comparative measurements of the several parts of the various limbs of the body are given. But it may be pointed out that according to the *daśatāla* system the whole length of the body is ten times the face, while in the

navatāla, it is nine times, and hence in the *ashṭa-tāla*, it should be eight times the face, and soforth.

The characteristic attributes and poses, and the ornaments, decorations etc. of each of these female deities are described in detail.

The goddess Sarasvatī is represented seated on a lotus-seat. Her complexion is white like crystal. She is four-armed; in her two right hands she holds a *saṁdarśa* [1]) and a rosary (*akshamālā*) and in both her left hands a book (*pustaka*) and a water-pot (*kuṇḍika*). There exists, however, also a two-handed variety of the Sarasvatī image. Her ornaments, which are described in detail, include ear-pendents of the type called *grāha-kuṇḍala* (= *makara-kuṇḍala*?).

Sāvitrī, who is seated on a lotus-seat to the left of Brahmā, may be white and red, or dark blue (*śyāma*) of colour. She has two arms and two eyes, in other words, she assumes a purely human shape. She holds a blue lotus-flower (*utpala*) in her right hand, while her left is stretched out in the gesture of conferring a boon (*vara*). Sāvitrī too is adorned with various ornaments.

Lakshmī, the goddess of good fortune, shows a benign face (*prasannavadanā*); her complexion is like pure gold. She has four arms. Her upper right hand is raised in the attitude of granting security (*abhaya*), in her other right hand she holds either a red lotus flower (*padma*) or a rosary. The attributes held in her left hands are a tabor or hand-drum (*ḍiṇḍima*) and a blue or a red lotus-flower. As befits the goddess of luck, she is bedecked with gorgeous ornaments and jewels.

In contradistinction with 'the great Lakshmī' (Mahā-Lakshmī) thus described, the 'ordinary' Lakshmī is said to have only two hands, in each of which she holds a red lotus-flower (*rakta-padma*). Her distinguishing feature is that she is placed between two elephants. Her place is over the entrance to the house or at the *madhyaraṅga* [2]). A few words are added about representations of Lakshmī as the spouse of Vishṇu.

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[1]) Should we read *ādarśa* (mirror)? The regular attribute of Sarasvatī, however, is the lute (*vīṇā*).

[2]) Cf. above pp. 40 sq.

The Earth-goddess (*Mahī-śakti*), who is placed on the other side of Vishṇu, is said to be two-armed and two-eyed. In her right hand she holds a blue lotus (*utpala*); with her left hand she indicates the granting of a gift. The has a dark blue (*śyāma*) complexion and wears *makara* earrings.

Durgā, also called Gaurī and Pārvatī, the consort of Śiva, is two-armed. She holds a blue lotus in her right hand, her left hand is in the gesture of granting a gift (*vara*). She is distinguished by all the marks of female beauty and is lavishly adorned with ornaments. She has a dark blue (*śyāma*) complexion and wears yellow garments. She is placed to the left of Śiva, or of his symbol — the *liṅga*.

Manonmanī, the goddess of love, is four-armed and three-eyed. Strange to say, her hair-dress is said to be the matted hair (*jaṭā*) of an ascetic. Two of her hands are in the attitude of granting protection (*abhaya*) and of conferring a boon (*vara*). In each of the two other hands she holds a lotus-flower. Her complexion is red and white (*śveta-rakta*) or dark blue (*śyāma*). It appears that this Śakti also is reckoned to belong to the retinue of Śiva, in whose temple she is worshipped.

Finally 'the seven Mothers' are described. In general these Śaktis have the same emblems and distinguishing features as their male counterparts. Brahmāṇī and Rudrāṇī, for instance, who are the Śaktis of Brahmā and Rudra (or Śiva) respectively wear the matted hair of the ascetics. Brahmāṇī has four faces and four hands, in two of which she holds a rosary (*akshamālā*) and a water-pot (*kuṇḍika*). Rudrāṇī has a white complexion, her attributes are the antelope (*hariṇa*) and the noose (*pāśa*). Vaishṇavī and Varāhī, who are both Śaktis of Vishṇu (the latter in his Boar *avatāra*), are distinguished by a dark blue [illegible] and hold the discus (*chakra*) and conch-shell [illegible] the well-known emblems of Vishṇu. Vārahī has a boar's head.

The chapter closes with a very brief reference to the plumb-lines which are more fully treated in a separate chapter.

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[1]) Cf. *Bṛihatsaṁhitā* LVIII 56, and *Annual Report Archl. Survey of India* for 1903—04, pp. 218 sq., plate LXIII, 1.

CHAPTER LV.

Jaina images *(Jaina-lakshaṇa-vidhāna).*

The opening lines describe in detail the various kinds of measurements used in Indian sculpture.

The linear measurement is divided into six kinds *māna*, *pramāṇa*, *parimāṇa*, *lambamāna*, *unmāna*, and *upamāna*.

The measurement from the foot to the top of the head is called *māna* [1]), which is in fact nothing but height. *Pramāna* is the measurement of breadth (*vistṛita*); *parimāna* is the measurement of girth or circumference (*paritaḥ*); *lambamāna* is the measurement along the plumb-line, the line drawn perpendicularly through the different parts of the body, the *māna* or the measurement of the height being determined by the surface of the body; *unmāna* is the measurement of thickness (*nimna*) or diameter; and *upamāna* is the measurement of interspace (*antara*), such as that between the two feet of an image; this measurement is evidently taken from one plumb-line to another.

The primary measurement (*ādimāna*) refers to comparative measurement and is divided into nine kinds. The height of an image is determined: 1st, by comparing it with the breadth (*tāra*) of the whole temple (*harmya*); 2nd, with the height of the cella or sanctum (*garbhagṛiha*); 3rd, with the height of the door (*dvāramāna*); 4th, with the measurement of the base (*aḍhishṭhāna*); 5th, by expressing it in *hastas*; 6th, in the *tāla* system; 7th, in *aṅgulas*; 8th, by comparing it with the height of the worshipper; and 9th, with the height of the vehicle (*vāhana*) or with the height of the principal idol (*mūlabera*).

Absolute measurement in cubits (*hasta*), etc., is given in the case of many architectural and sculptural objects.

The *aṅgula* (lit. finger) measurement has reference to both comparative and absolute measurements. Three kinds of *aṅgulas* are expressly distinguished, and a fourth *aṅgula* is added later.

a) The *berāṅgula* is the measurement taken by the *aṅgula* or finger of the main idol;

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[1]) The wording of the text is somewhat obscure,, but the above seems to render what is meant.

b) the *mānāṅgula* refers to the ordinary absolute measurement in *aṅgulas*, one *aṅgula* being equal to eight *yavas* ('barley grains') of $^3/_4$ of an English inch [1]);

c) the *mātrāṅgula* is the measurement determined by the length of the digit and the width of the middle finger in the right hand of the master (*kartṛi*).

d) Another kind of *aṅgula* measurement is determined by dividing the whole length of the body of an image into a number of equal parts, each of which is called a *dehalabdhāṅgula*, or simply *dehāṅgula*. In the last sense, the *aṅgula* is used to mean simply a part. Thus both *aṅgula* and part (*aṁśa*) are indiscriminately used throughout the work. If the length etc. of a building or image is divided into a number of equal parts for some special purpose, each of them is called *aṅgula* or *aṁśa* indiscriminately. This lack of discrimination has been very confusing in many places, while rendering it extremely hard to distinguish an absolute measurement from a comparative one.

The height of the image is determined by comparing it with the height of the worshipper (*yajamāna*). It may be of nine kinds, as it extends from the foot of the worshipper to his penis, navel, heart, breast, arms, jaw, tip of the nose, hair-limit (on the fore head), or to his full height. The *tālamāna* admits of many varieties; the ten *tāla* measurements are from one-*tāla* to *daśa-tāla;* each of these is again divided into three types, the *uttama* or the largest, the *madhyama* or the intermediate, and the *adhara* or the smallest. Thus an image is of the *daśa-tāla* measurement, when its whole length is equal to ten times the face (?head). In the largest type of the *daśatāla* system, the whole length is divided into 124 equal parts, which are proportionately distributed over the different limbs of the body; in the intermediate type, the whole length is divided into 120 equal parts, and in the smallest type, into 116 equal parts. In the *navatāla* system, the whole length would be nine times the face, in the *ashṭa-tāla*, eight times, and so forth. Several of these *tāla* measures are described in detail in the subsequent chapters.

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1) Cf. above pp. 2 sq.

The varieties of the alternative measurements (in each case) are simplified by the application of the rules of *āyādi-shaḍvarga*.

The main object of the chapter, the description of the Jaina deities, is thus submerged in a lengthy discussion of the various measurements used both in architecture and sculpture.

Like al other idols, the images of Jaina deities too may be stationary or movable; they may be in the erect or in the sitting posture. They have a purely human shape, and wear neither robes nor ornaments. On the chest the *śrīvatsa* symbol is marked in gold. They are placed on a throne decorated with a *makara-toraṇa* and the ornamental tree (*kalpavṛiksha*), and are attended by Nārada and other sages, by Yakshas, Vidyādharas, Siddhas, Nāgendras, and Lokapālas, etc. All these attendants, it should be observed, are also Hindu deities.

The twenty-four Tīrthaṅkaras or Jaina saints are referred to but not specified [1]).

CHAPTER LVI.

Buddhist images (*Bauddha-lakshaṇa-vidhāna*).

The account of these images too is very meagre. Evidently the author had in mind solely effigies of the Buddha(s), not of other Buddhist deities. This is clear from his description. These figures, he says, which may be either erect or in the sitting posture, are placed on a throne (*simhāsana*) and are distinguished by the *aśvattha* tree as well as by the *kalpavṛiksha* or mythic wonder-tree. The latter, as we have seen, is represented in connection with other divine beings as well, but the *aśvattha* or ficus religiosa is characteristic for the Buddha, as the Bodhi-tree under which he attained Enlightenment (*Bodhi*) belongs to that species. Another peculiar mark of the Buddha, which has been duly noted by the author, is the *ushṇīsha* or protuberance of the skull (*ushṇīshojjvalamaulika*) [2]). For the rest the ap-

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[1]) Cf. James Burgess, *Digambara Jaina iconography*-*Indian Antiquary*, vol. XXXII, pp. 459 sqq.

[2]) The *ūrṇā* or mark between the brows, which is another distinguishing feature of the Buddha, is not noticed in the course of this description.

pearance of the Buddha is purely human. He has a full face, a long nose, smiling eyes, and elongated ears. His body is fleshy, his chest broad, his belly round, and his arms long. He wears a yellow garment (*pītāmbaradhara*) and his complexion is white. Like other idols, Buddha images are made of wood, stone or brass (*lohaja*). They are measured according to the largest type of the *daśatāla* system.

CHAPTER LVII.

Images of sages (*Muni-lakshaṇa-vidhāna*).

The seven well-known patriarchs or sages (*ṛishi*, *muni*) are taken to illustrate the three varieties of the *tāla* measurement. They are Agastya, Kāśyapa, Bhṛigu, Vasishṭha, Bhārgava, Viśvāmitra, and Bharadvāja.

Agastya is bright blue (*śyāma*) in colour, Kāśyapa yellow (*pīta*), Bhṛigu dark or black (*kṛishṇa*), Vasishṭha red (*rakta*), Bhārgava brownish (*piṅgala*) Viśvāmitra red (*rakta*), and Bharadvāja yellow (*hāridra*, lit. turmeric-coloured). They are represented in a purely human shape ("two-armed and two-eyed"), wear yellow garments and the sacred thread (*yajña-sūtra*) and are distinguished by the matted hair of the ascetics (*jaṭājūṭena maṇḍita*).

In their two hands they hold a staff (*daṇḍa*) and a book (*pustaka*). Of Agastya, who is first mentioned among the seven sages, it is stated particularly that he is corpulent (*bṛihat-kukshi*) and hump-backed (*kubjākāra*).

Of these seven sages, Agastya is measured in the seven-*tāla*, Kāśyapa, and Bhṛigu in the eight-*tāla*, and the rest in the nine-*tāla*. The details of these three *tāla* measurements are described subsequently.

In the *sapta-* or seven-*tāla* measurement the whole length of the image is seven times the height of the face, which is generally twelve *aṅgulas* (9 inches) in the Indian system. This length is divided into $12 \times 7 = 84$ equal parts of which the proportional distribution to the different limbs is explained at great length.

In the *ashṭa-* or eight-*tāla* system the whole length is similarly

divided into 96 equal parts, and in the nine-*tāla* into 108 equal parts. The details of the distribution of these parts to the different parts to the body it will be unnecessary to reproduce here.

CHAPTER LVIII.

Images of Yakshas, Vidyādharas, etc.
(Yakshavidyādhara-vidhāna).

The present chapter deals briefly with four classes of semi-divine beings, namely, Yakshas, Vidyādharas, Gandharvas, and Kinnaras. They are said to have two arms and two eyes, in other words, they assume a purely human appearance. They are adorned with the crown known by the name of *karaṇḍa*. The colour of the Yakshas is stated to be dark blue (*śyāma*) and yellow (*pīta*); that of the Vidyādharas dark red (*śyāma-rakta*) and yellow. The images both of Yakshas and Vidyādharas are measured according to the *navatāla* system. The Yakshas are to be distinguished from the Rākshasas which are evil spirits, whereas the former are regarded as supernatural beings of a benevolent and inoffensive disposition. The Yakshas act as attendants (*anuchara*) and chowrie-bearers of the gods. The Vidyādharas are a kind of fairies possessed of magical power. Here apparently they are described as Atlantes [1]). The Gandharvas are celestial choristers, and celebrated as musicians.

The description of the Kinnaras, which is contained in a Mālinī stanza at the end of the chapter, may be quoted in full. It runs als follows: —

charaṇa-paśu-samānaṁ chordhvakāyaṁ narābhaṁ
vadana-Garuḍa-bhāvaṁ bāhukau pakshayuktau
makuṭa-kamala-yuktaṁ pushpasachchhāyavarṇaṁ
paritakarṇa(?)-vīṇaṁ Kinnarasya svarūpam.

„The legs are like those of an animal, the upper part of the

[1]) The description in the text is unfortunately far from clear. It is said that their legs assume the shape of a plough (*lāṅgalākāra*), that two hands are resting on their knees, and that two hands are raised towards the *gopura*.

body is like that of a man, the face is like that of Garuḍa [the bird of Vishṇu], the arms are provided with wings. He is adorned with a diadem and a red lotus, has the beautiful hue of a flower, and holds a lute (*vīṇā*). Such is the characteristic shape of the Kinnara." [1])

CHAPTER LXI.

Images of devotees *(Bhakta-lakshaṇa-vidhāna)*.

The devotees are divided into four classes according to the four stages of holiness, called — *sālokya*, *sāmīpya*, *sārūpya*, and *sāyujya* [2]). *Sālokya* is the result of devotion (*bhakti*), knowledge (*jñāna*), and renunciation (*vairāgya*). Knowledge combined with renunciation leads to *sāmīpya*. *Sārūpya* is produced in the worshipper by meditation alone, and *sāyujya* is attained by the true knowledge (of God).

The images of the *sālokya* class of worshippers are measured in the largest type of the *navatāla* system, in which the whole length is divided into 112(?) equal parts. Those of the *sāmīpya* class are measured in the smallest type of the *daśatāla* system in which the whole length is divided into 116 equal parts. Those of the *sārūpya* class are measured in the intermediate type of the *daśatāla* system, in which the whole length is divided into 120 equal parts. And the figures of the *sāyujya* class are measured in the largest type of the *daśatāla* system in which the whole length is divided into 124 equal parts.

The first two systems, namely, the largest type of the *navatāla* and the smallest type of the *daśatāla*, are minutely described in this chapter. The other two systems, that is, the intermediate

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[1]) The first compound of the fourth *pāda* is obscure. It may be noticed that the lower part of the body of the *kinnara* is always that of a bird. Cf. above p. 40, n. 2.

[2]) The *sālokyādi-chatushṭaya* is also mentioned in the *Bhāgavata-purāṇa* IX, 4, 67. The literal meaning of the four terms in question is: dwelling in the same world (*viz.* as the deity), dwelling in the vicinity (of the deity), being conform (with the deity), and being united (with the deity).

and the largest types of the *daśatāla*, are treated subsequently in two separate chapters.

CHAPTER LX.

The vehicles of the gods. The goose [the vehicle of Brahmā] *(Vāhana-vidhāna. Haṁsa-lakshaṇa).*

The chapter opens with the announcement that the *vāhanas* of the Triad (*Trimūrti*) will now be described. But only one of them, namely, the goose (*haṁsa*), is described in this chapter, the other three, the Garuḍa, the bull, and the lion, being described in the next three chapters. The word *vāhana* generally implies, drawing, bearing, carrying, conveying, bringing, etc., as also any vehicle or conveyance, *e. g.* a chariot, a waggon, a horse, or an elephant. But in these four chapters, the term *vāhana* is used to designate the various animals used by the gods and goddesses as their vehicles.

The goose is the vehicle of Brahmā. The limbs of the goose are said to be measured in the largest type of the *dvi-tāla* system. The details of this system are described minutely. It is white all over, with red legs and a golden beak.

The chapter closes with the statement that rows of geese should be beautifully carved or painted in the temples of the gods and in the mansions of Brahmins and kings. They are figured on the entablature (*prastara*), on the upper part of the *uttara*, on the *kuṭa*, *nīḍa* and *grīva* (neck).

CHAPTER LXI.

The Garuḍa (*Garuḍa-māna-vidhāna*) [1].

The chapter opens with a lenghthy discussion on the application of the rules of *āyādi-shaḍvarga* in order to reconcile the

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[1]) The Garuḍa is a mythical bird, the sovereign of the feathered tribes and the enemy of the Serpent (*Nāga*) race. There is a tradition that Garuḍa is the son of Kāśyapa and Vinatā. Hence the metronymic 'Vainateya' by which he is often designated. The myth of the birth of Garuḍa is told in the *Mahābhārata*, *Ādi-parvan*, *adhy.* 16.

various comparative measurements suggested for the Garuḍa and other vehicles of the gods.

Garuḍa is the vehicle (*vāhana*) of Vishṇu. His limbs are measured in the *navatāla* system, the details of which are given in a previous chapter.

He is constructed in the erect or the sitting posture, meditating on Vishṇu with joined palms. The arrangement of his various limbs and their colour etc., are described at great length. The description is far from clear in all its details, but this much is obvious that the Garuḍa is figured partly as a human creature and partly as a bird. He is provided with feathers, with wings painted in five colours, and with a beak (*tuṇḍa*), but, on the other hand, the description refers to his arms (*prakoshṭha*), his ears and hair (*keśa*). He wears various ornaments (*sarvālaṅkāra-samyukta*) including a diadem of the kind called *karaṇḍa* (*lit.* a basket) and is gorgeously painted in a great variety of colours. He is described as being of a terrific appearance (*ugradṛiś*). His worship is stated to conduce to the destruction of the enemy (*śatru-nāśa*).

CHAPTER LXII.

The bull [the vehicle of Śiva] (*Vṛishabha-lakshaṇa-vidhāna*).

The bull Nandin [1]) is the animal of Śiva. Its image, which may be either recumbent or erect, is placed facing the north-west, on a pedestal (*pīṭha*), either inside the shrine (*vimāna*) or in a pavilion (*maṇḍapa*) in front of the temple. It is not measured in any *tāla* system. Various absolute and comparative measurements are prescribed. Its height, for instance, may be equal to the height of the idol (of Śiva), or up to its ears, or arms, or

[1]) The image of the bull Nandin is regularly found in front of temples dedicated to Śiva. A well-known example is the colossal recumbent bull, placed opposite the famous *vimāna* of Tanjore. It is hewn out of one block of black granite and measures 16 feet in length and 13 feet in height. A remarkable bronze Nandin, which is found at Brahmor (Chambā) in the Western Himālaya and which, on account of an inscription, may be assigned to the seventh century A. D., is illustrated *Antiquities of Chamba State* (*Archaeological Survey of India*, New Imp. Series, vol. XXXVI) Part I, plate X.

the height may be from one cubit to nine cubits, or the height may be equal to, three-fourths or half of the height of the door of the temple. The bull Nandin is made either solid or hollow, of brass (*lohaja*), stone, wood, *ābhāsa* (marble?), *ratna* (precious stone?), *sudhā* (stucco), baked clay (terra-cotta?) and *śarkara*.

The description and measurements of the various limbs of the bull, which are given in great detail and occupy nearly the whole of the present chapter, it will be unnecessary to reproduce here. From the description, which is partly obscure, it would appear that the bull of Śiva is white in colour except the four legs, the hoofs, and the ears which are red. He is covered with a tiger-skin and wears not only garlands round the neck but even foot-rings or anklets (*nūpura*).

CHAPTER LXIII.

The lion (*Siṁha-lakshaṇa-vidhāna*).

The lion is the last of the four divine vehicles or *vāhanas*, to which a special chapter of the Mānasāra is devoted [1]).

Like in the case of the bull, the image of the lion is not measured in any *tāla* system. The absolute measurements of the various parts of the lion, expressed in *aṁgulas*, are enumerated in the text. The lion is made in the erect, sitting, or recumbent posture. His tail is generally equal to his height. His four legs are like those of the tiger. His colour is white, but his mane should be red. The shape of his nails and teeth is compared to that of the crescent (*bāla-chandra*, *ardha-chandra*).

[1]) At the beginning of the chapter (and again in the concluding verse) the lion is loosely indicated as 'the vehicle of the gods' (*devānāṁ vāhanam*). It is, however, well known that the lion (or the tiger) is more particularly the animal of Pārvatī the consort of Śiva. It will be hardly necessary to point out that of the other deities both male and female each, as a rule, has his own *vāhana*, e. g. Kārttikeya the pea-cock, Gaṇeśa the mouse, Indra the elephant, Yama the buffalo, Sūrya a chariot drawn by seven horses, Varuṇa a crocodile (*makara*), Kubera a man (whence his epithet *naravāhana*), etc.

CHAPTER LXIV.

The image (*Pratimā-vidhāna*).

This chapter, which is missing in all manuscripts but one, opens with the announcement that herein will briefly be described the measurements from head to foot of the sixteen attendant deities of the Vishṇu temple. It will be remembered that in the 32nd chapter on 'attendant deities' (*Parivāra-vidhāna*) groups of eight, ten, sixteen, and thirty-two deities have been mentioned who are to occupy subsidiary shrines in the compound of the large Vishṇu temple.

But the contents of the chapter, in reality, do not expressly describe any of the groups of deities in question. The first part deals with the various kinds of comparative measurements already discussed at the beginning of the 55th chapter on the Jaina deities. The second part elaborately describes the rules of the *āyādi-shaḍvarga* which have been repeatedly mentioned, whenever a variety of measurements was suggested for any particular object.

The comparative measurement is distinguished into twelve kinds, as it may be compared to the phallus, the main Vishṇu image, the width of the sanctum (*garbhagṛiha*), the breadth of the main temple (*harmya*, *prāsāda*), the door, *vaṁsa* (?), basement, pillar, or based on cubit (*hasta*) measurement, *tāla*-measurement, the measurement of the worshipper, and *aṅgula* measurement.

The *aṅgula* is further distinguished, as already pointed out, into three kinds — *liṅga-* or *bera aṅgula*, the *mānāṅgula*, *viz.*, *aṅgula* of eight *yavas* or $^3/_4$ inch, and the *dehalabdha aṅgula*, *viz.*, one of the equal parts into which the whole length of an image is divided. The measurement obtained from a comparison with the height of the main idol or the worshipper is of nine kinds, as it may reach the full length (of the idol or the worshipper), his eye, nostril, chin, arms, breast, heart, navel, or penis.

Other measurements obtained from a comparison with the phallus, and various parts of the temple building such as the door, the pillar, etc., admit of many varieties and proportions.

CHAPTER LXV.

The largest type of the daśatāla measurement, used for images (*Pratimā-mānottama-daśatāla-vidhāna* [1]).

In this system the whole length of an image is divided into 124 equal parts which are proportionately distributed over the different parts of the body from head to foot. The measurement of breadth, etc., of the various limbs is not included in these 124 parts. The measurement of the hand, etc., is also excluded. All the numerous parts of the body are minutely described. Such minute measurement as that of the finger-digit, the interspace between two toes, etc., has not escaped the notice of the author of the Mānasāra.

CHAPTER LXVI.

The intermediate type of the daśatāla measurement, used for female images (*Strīmāna-madhyama-daśatāla-vidhāna*).

The female deities of the higher order are generally measured in this system. The whole height of the image is divided into 120 equal parts which are proportionately distributed over the various parts of the body from head to foot. The details are minutely described in the text.

The face is taken as the standard of the *tāla* measurement. It is generally taken to be twelve *aṅgulas* or about nine inches. The face is stated to be of oval shape (*kukkuṭāṇḍasamākāra*, lit. 'shaped like the egg of a hen'). The eye-brow is shaped like the bow (*chāpākāra*), the eyes like a fish (*matsyākāra*), the nose like the sesame flower (*tilapushpākṛiti*), and the nostrils (*puṭa*) like a bean (*nishpāvabīja*).

According to both Indian and European canons, a well proportioned male human figure is equal to eight times (*ashṭatāla*) the length of the face, and a female human figure is seven and a half times the length of the face. "The other rules arrived at

[1]) The Mss. have *Pratimānāmuttama°*.

by the Indian artist do not appear to be divergent from those evolved by the European artist, and if in Indian sculpture the results are not (as) good in some instances, it is the fault of the artist and not attributable to the guide books" [1]).

CHAPTER LXVII.

The plumb-lines (*Pralamba-lakshaṇa-vidhāna*).

The plumb-lines, as has already been pointed out, are lines drawn through the body of an image in order to find out accurately the perpendicular and the horizontal measurements of the different parts of the body.

This is done by means of an instrument called *pralamba-phalaka* which is a square plank of four, three, two, or one *aṅgula* in thickness with the sides equal to three-fourths or half the length of the image. Another plank of the same size is made and used as the stool on which the image is placed. The first mentioned plank (*pralamba-phalaka*) is fixed to the crown of the head of the image. The planks are kept parallel to each other. Some holes are made in the upper plank wherefrom are suspended strings, at the other end of which are attached small balls of iron or stone. The number of holes and strings suspended from them by which the plumb-lines are determined varies from five to eleven, according to the different postures and poses of the image. The five principal plumb-lines consist of one drawn from the centre of the upper plank corresponding to the crown of the head, and four on the four sides of the body. Two other lines drawn adjoining the right and left sides of the face make the number seven. Another two lines drawn on the right and left sides of the back of the head make the number nine; and two lines drawn from the two armpits make the total of lines eleven.

The line drawn from the crown of the head (*śikhā-maṇi* lit. crest jewel) passes by the diadem and the headdress, the middle

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[1]) T. A. Gopinath Rao, *Elements of Hindu Iconography*.

of the forehead, the eye-brows, the nose, the chin, the neck, the chest (*hṛidaya*), the navel, the penis, the thighs, between the knees, the ankles (? *nalakas*), the heels, the soles of the feet, and the two big toes. This is evidently drawn along the surface of the body in the perfectly erect or straight posture of the image. The other plumb-lines too touch different parts of the body; but they are not particularly mentioned here.

Very minutely are described the comparative and the absolute measurements of the perpendicular distance between different parts of the body by a plumb-line, as well as the horizontal distance from one line to another. The distance, say, between the two big toes, is said to be eight *aṅgulas*. The variation of these measurements in different postures and poses is carefully considered.

The three postures of images, namely, the erect or standing (*sthānaka*), the sitting (*āsana*), and the recumbent (*śayana*-lying down) are frequently mentioned in the course of the Mānasāra. [1])

In the present chapter special reference is made to the three *bhaṅgas* or poses which are distinguished in Indian sculpture. They are known as *samabhaṅga* or equipoise, *ābhaṅga* or a slight flexion, *atibhaṅga* or an excessive flexion, and *tribhaṅga* or of three flexions [2]).

CHAPTER LXVIII.

The first casting of the image (*Madhūchchhishṭa-vidhāna*)

The chapter opens with an enumeration of the names of

[1]) Each of these three does, of course, admit of various kinds. The sitting posture (*āsana*) is in particular distinguished into various forms in Indian literature and sculpture, such as the *padmāsana*, *bhadrāsana*, *vajrāsana*, *vīrāsana*, *svastikāsana*, *yogāsana*, etc. In some places, even eighty-four postures are enumerated. These manners of sitting form part of the eight-fold observances of ascetics.

[2]) The expression *tribhaṅga* (and *tribhaṅgin*) is applied to Kṛishṇa in his aspect as the divine cow-herd (Gopāla) playing the reed-pipe. Cf. *Een onbekend Indisch tooneelstuk (Gopālakelicandrikā)*. Tekst met inleiding door W. Caland. (Verhand. Kon. Akad. v. Wetensch. te Amsterdam N. R. Dl. XVII N°. 3. Amsterdam 1917, p. 46, l. 1 (*marakatavibhaṅgojjvalatribhaṅgāṅgagopālena*) and p. 124, l. 32 (*tribhaṅgin*).

phalli and ascetics (*muni*) as well as architects [1]), but the subject proper is the casting of an image in wax (*madhūchchhishṭa*). The *sthapati* and the *sthūpaka* are to prepare the wax; but the actual preparation of it is not expressly described. All kinds of images, temporary or permanent, stationary or movable, are moulded in this fashion. The process appears to be this. Some part of the image is covered with thin copper-leaf (*tāmrapatra*) and the wax is laid on two or three *aṅgulas* deep. *Mulikā* (?) is spread above the part covered with wax. The idol is heated after it has been besmeared with this. If the master likes, the process of smearing may be done with melted iron too. The half of the image not covered with earth is washed in water. This process is repeated again and again. If any of the minor limbs be lost through this process, the image should be furnished with it again after having been heated. But if the head or the middle of the body (*madhyakāya*) be damaged, the whole image should be changed. If the master does not approve of the image, it should be recast.

The whole process in its different stages has to be attended by many ritualistic ceremonies.

In other texts the process of casting an image is much more clearly described.

"If images have to be cast in metal, the wax must first be melted and poured (out of the mould) and all defects removed with cloth" [2]).

"If the images be required to be made of earth, rods (of metal

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[1]) The six kinds of phalli (*jyotir-liṅga*) enumerated here are: *śaiva*, *pāśupata*, *kālāmukha*, *mahāvrata*, *vāmana*, and *bhairava*. Cf. above p. 52, where the fifth class is called *vāma*. The names of the *munis* are Agastya, Kāśyapa, Bhṛigu, Gautama, Bhārgava, Gālava (? Gārga), etc. *Cf.* above p. 60. The sages who are experts in architecture are the following: Viśvakarman, Viśa, Viśvasāra, Prabodhaka, Vṛita, Maya. Tvashṭar, Manu, Nala, Mānavin. Mānakalpa, Mānasāra, Prashṭar, Mānabodha, Viśvabodha, Naya, Ādisāra, Viśāla, Viśvakāśyapa, Vāstubodha, Mahātantra, Vāstuvidyāpati, Parāśarīyaka, Kālayūpa, Chaitya, Chitraka, Āvarya, Sādhakasāra, Saṁhita, Bhānu, Indra, Lokajña, and Saura. The text speaks of thirty-two of these sages, but the actual number of the names enumerated comes to thirty-three.

[2]) *Karaṇāgama* II. V. 41.

or wood) must me (inserted in them); if of metal, it must first be prepared well in wax" [1]).

"If an image is to be made of metal, it must first be made of wax, and then coated with earth; gold and other metals are purified and cast into (the mould) and a complete image is thus obtained by capable workmen" [2]).

"In regard to bronze images", says Mr. RAO [3]), "it is believed by some that India could not have known the *cire perdue* method of making metal images earlier than about the 10th century, A.D. and that India must have therefore borrowed it from Europe. That the art of casting metals in wax moulds is much earlier in India can be shewn in more ways than one". In support of his assertion, Mr. RAO cites the three above mentioned quotations.

CHAPTER LXIX.

The defects of the limbs (*Aṅgadūshaṇa-vidhāna*).

The chapter opens with the announcement that it will describe the evil consequences of a defective construction of buildings which threatens the king, the kingdom and the maker. It is laid down that no part of a building should be larger or smaller than what is prescribed. But nothing is further stated about the defects themselves. Nor are images separately mentioned. The penalties for defective construction are enumerated with regard to the different architectural members, such as doors, staircases, columns, walls, domes, spires, etc. Thus it is stated that, if the altar (*vedikā*) be too small, the master will lose his eye-sight; if the pinnacle (*stūpikā*) be too large or too small, the people will be afflicted with poverty; if the columns be too large or too small, the family of the master will be exterminated, and so forth.

No such penalties, however, are mentioned for defects in sculptural objects.

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[1]) *Supravedāgama* XXXIV, 21.
[2]) *Vishṇu-saṁhitā*, *paṭala* 14.
[3]) *Elements of Hindu Iconography*.

CHAPTER LXX.

The chiselling of the eye (*Nayanonmīlanalakshaṇa-vidhāna*).

When the Indian sculptor has carved a divine image, the ceremony of chiselling (*lit.* opening) the eyes of the idol is the final function by which it is, as it were, imparted with eye-sight and rendered fit to be worshipped. The custom is quite ritualistic, although it is stated here that it should be carried out by the *sthapati*. The ceremonies consist in the worshipping of different deities, in performing the sacrifice with the holy fire, and in the *ratna-śuddhi* (*lit.* purifying the jewel), etc.

The setting of precious stones in the different parts of the phallus, and in the images of the deities is also described in the present chapter.

This last chapter of the work closes with the statement that this science of architecture and sculpture was originally described by Brahmā, Indra and all the other gods, and that the Mānasāra has been compiled on the basis of these authorities.

ADDENDA AND CORRIGENDA.

Page VII, after line 16 add 'To Messrs F. PIJPER and C. VAN ARENDONK I am indebted for a good deal of friendly help.'

" 3, line 12, for 'temples (*vimāna*)' read '*vimāna*'.

" 4, " 1, for '*āraiga*' read '*araiga*'.

" 4, " 2, add a comma after '*ādīka (?)*'.

" 4, " 2, for '*śibika*' read '*śibikā*'.

" 6, " 4—5 (from bottom upwards), omit 'beginning with the north-east [3])' and the footnote 3.

" 8, " 10, for 'is given in the text' read 'will be found in the Translation'.

" 8, " 13, omit 'these'.

" 10, " 1, for 'text' read 'Translation'.

" 10, Omit footnote or add *Rāmāyaṇa, Laṅkākāṇḍa*, III, 20, 22.
Kauṭilīya arthaśāstra, chap. XXIV.
Śukranīti ed. Jīvānanda Vidyāsāgara chap. IV, sec. VI, 2—16, 23—28;
Brahmāṇḍa Pūrāṇa, part 1,
2nd *anushaiga pāda*, VII, 105, 102.
cf. Ep. Carnat. vol. III. Maḷavaḷḷi Tāluq no. 61, Roman text last verse p. 126, translation p. 62, etc. etc.

" 11, " 2, omit 'or temple'.

" 11, " 9 (from bottom upwards), for 'dealt with later' read 'found in "a Dictionary of architectural terms" by me'.

" 12, " 2 (from bottom upwards), for '*narañjali*' read '*narāñjali*'.

" 13, " 9 (from bottom upwards), for 'its breadth and length' read 'the breadth and length of the foundation-cave'.

Page 14, line 14, after 'base' add a note [2]).
Footnote [2]): ibidem, pp. 23, 26, on the authority of a 'Tamil Ms.'

„ 14, „ 5, (from bottom upwards), for 'is' read 'are'.

„ 15, last line, after Rām Rāz add a note [3]).
Footnote [3]): ibidem, p. 29.

„ 16, line 9 (from bottom upwards) omit 'which is given below'.

„ 16, „ 2 („ „ „) after architecture add a note [1]). Footnote [1]): Rām Rāz, pp. 32, 39.

„ 19, for the tittle 'The vimāna' read 'The general description of Buildings'.

„ 19, line 5, for '*lupa*' read '*lupā*'.

„ 19, „ 6, for '*stupikā*' read '*stupikāla*'.

„ 20, „ 9, for '*lupa*' read '*lupā*'.

„ 21, „ 14 (from bottom upwards), for 'chambers' read 'parts'.

„ 21, „ 13 („ „ „), omit 'temple'.

„ 21, „ 12 („ „ „), for 'gates' read 'gatehouses'.

„ 21, „ 11 („ „ „), „ 'aud' read 'and'.

„ 21, „ 2 („ „ „), „ 'temple' read 'building'.

„ 22, „ 9 („ „ „), „ 'and' read '*sadaśiva* and'.

„ 22, „ 2 („ „ „), „ '*lakṛiti*' read '*lakṛiti*'.

„ 23, „ for 'building' read 'buildings'.

„ 23, „ 14 „ '*pañchāla*' read '*pāñchāla*'.

„ 23, „ 15 „ '*Kaliṅga*' read '*Kaliṅga*'.
and „ '*magadha*' read '*māgadha*'.

„ 23, „ 16 „ 'instances' read 'instance'.

„ 23, „ 17 „ 'the greater part' read 'apparently'.

„ 23, „ 2 (from bottom upwards), for 'temple' read 'building'.

„ 23, footnote, omit 'Almost etc. — *Manusaṃhita*'.

„ 24, lines 4—5, omit 'where gatehouses (gopuras) etc. are constructed'.

„ 25, title, for 'gopura' read 'gatehouses'.

„ 25, line 17 (from bottom upwards) for 'gateways' read 'gatehouses'.

„ 25, „ 16 („ „ „) for 'temple' read 'building'. and add 'cf. p. 27. lines 5—6'.

Page 25, line 8 (from bottom upwards), for 'gateways' read 'gate-houses'.
„ 25, footnote 2, line 1, after 'occurs' add 'in the'.
„ 27, line 14, for '*pariyātra*' read '*pāriyātra*'.
„ 27, „ 22, for 'summarized' read 'given'.
„ 27, „ 26, for 'waterreservoir' read 'water-reservoir'.
„ 28, „ 9—10, for 'those of six faces as *maulika*, and those of five faces as *sarvatobhadra*', read 'those of five faces as *sarvatobhadra*, and those of six faces as *maulika*'.
„ 29, „ 25, for 'a' read 'an'.
„ 31, title, for 'The doors' read 'The location of doors'.
„ 32, line 11, for '*shāḍvarga*' read '*shaḍvarga*'.
„ 34, title, for '(Rājalakshaṇa-vidhāna)' read '(Rājyāṅgalakshaṇa, Bhūpālalakshaṇa)'.
„ 34, line 1, omit 'which bear the same title'.
„ 34, „ 19, for 'of' read 'for'.
„ 35, footnote, line 8, before '*Amarakosha*' read 'in the'.
„ 36, line 13 (from bottom upwards) after 'that' add 'of'.
„ 37, „ 1, for '(*andhra?*)' read '(*randhra?*)'
„ 37, „ 2, for '*āliṅga* (*Kaliṅga?*)' read '*Kaliṅga*'.
„ 38, „ 13, for 'timber-trees' read 'trees'.
„ 40, „ 5 (from bottom upwards) for 'me' read 'we'.
„ 42, footnote 2, for '33' read '34'.
„ 43, line 7, for '*keśabandhana*' read '*keśabandha*'.
„ 43, „ 9, „ '*paṭṭadhara*' read '*paṭṭadhara*'.
„ 43, „ 10, „ 'an' read 'a'.
„ 44, „ 22, „ 'in auspicious' read 'inauspicious'.
„ 48, „ 15, before 'kind' read 'a'.
„ 50, „ 1, for '*samābhaṅga*' read '*samabhaṅga*'.
„ 50, „ 13 (from bottom upwards), for '*Pañchajanya*' read '*Pāñchajanya*'.
„ 51, „ 7, for hand read side.
„ 54, „ 9, „ '*kshepana*' read '*kshepaṇa*'.
„ 55, „ 2, „ 'soforth' read 'so forth'.
„ 55, „ 15, either omit 'of colour' or read in its place 'in complexion'.
„ 56, „ 4, for 'The' read 'She'.

Page 56, line 6 (from bottom upwards), for 'Varāhī' read 'Vārāhī'.
" 56, " 3 (" " "), for 'Vārahī' read 'Vārāhī'.
" 56, omit footnote.
" 57, line 6, for '*Pramāna*' read '*Pramāṇa*'.
" 57, " 7, " '*parimāna*' read '*parimāṇa*'.
" 58, " 3, " 'of' read 'or'.
" 58, " 21, " 'jaw' read 'chin'.
" 58, " 26, " '*adhara*' read '*adhama*'.
" 59, " 6, " 'al' read 'all'.
" 60, " 6, " 'brass' read 'iron'.
" 60, " 19 (from bottom upwards), after '*(pingala)*' read a comma.
" 61, " 3, for 'to the body it will be unnecessary' read 'of the body, it will be unnecessary'.
" 62, " 2, " 'bird' read 'vehicle'.
" 65, " 4, " 'brass' read 'iron'.
" 65, " 5, " '*śarkara*' read '*śarkarā*'.
" 65, " 9 (from bottom upwards) omit 'of the Mānasāra'.
" 68, footnote, add 'for want of book, the page-mark could not be added'.
" 70, footnote [1]), add 'Are we to read Sādhakasāra-saṁhita?'
" 70, line 13, for 'again and again' read 'several times'.
" 71, footnote [2]) add 'for want of book, the page-mark could not be added'.

THESES.

THESES.

I.

The term 'Mānasāra' etymologically means 'the essence of measurement'; from certain passages it follows that it indicates both the treatise of that name and its author.

II.

The ungrammatical style of Sanskrit revealed in the branch of literature of which the Mānasāra is a representative, is due to the want of literary proficiency on the part of the professional architects who seem to have been the authors of it.

III.

The rules of the *āyādi-shaḍvarga* referred to in the Mānasāra are architecturally important, especially when alternative measurements are prescribed.

IV.

The term *'vimāna'* is used frequently in the Mānasāra and other works of Sanskrit literature to designate buildings in general and not temples alone.

V.

The technical names (*nāgara*, *drāviḍa*, *vesara*) of the three styles of Indian architecture are geographical, in the same sense as those of the four Graeco-Roman orders.

VI.

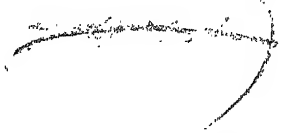
There seems to have been a relation of indebtedness between the Mānasāra, on the one hand, and the architectural portions of the Agni-Purāṇa, the Garuḍa-Purāṇa, the Matsya-Purāṇa, the Bhavishya-Purāṇa; the Kāmikāgama, the Suprabhedāgama; and the Bṛihatsaṁhitā on the other.

VII.

The construction of altars was apparently the beginning of religious architecture in India: the rules for the size and the shape of the various *vedis* are given in the Brāhmaṇas long before they were embodied in the Kalpa-sūtras; but the explanations of the manner in which the manyfold measurements and transformations had to be managed are explicit in the Śulva-sūtras.

VIII.

Certain points of similarity between the Mānasāra and Vitruvius are so striking as to raise the presumption that the two works are in some way dependent on each other.



IX.

The five Indian and the five Graeco-Roman orders are similar in their composition.

X.

There exists a certain similarity between the qualifications of the Indian architects described in the Mānasāra and elsewhere in Sanskrit literature and those of the Graeco-Roman architects given by Vitruvius.

XI.

Even in the absence of archaeological remains, literary evidence, especially when the different treatises happen to point to the same fact, cannot reasonably be doubted; (*e. g.* the existence of iron images and residential buildings of many stories in ancient India).

XII.

Kṛishṇa's advocacy of war described in the Bhagavadgītā is justifiable, in other words, it was Arjuna's sad duty to kill his relatives in the war for a righteous cause.